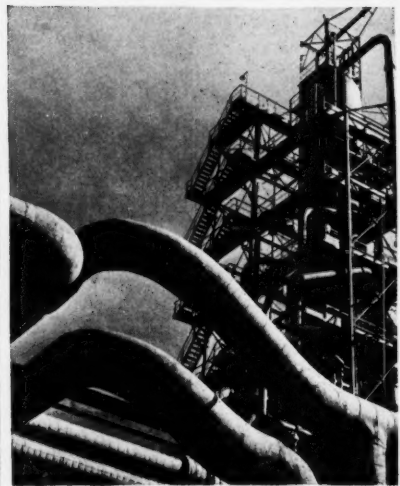


# Chemical Week

September 6, 1952

Price 35 cents



**CW Report:** Here's a roundup of this year's new chemicals, who makes them, what they'll do . p. 19

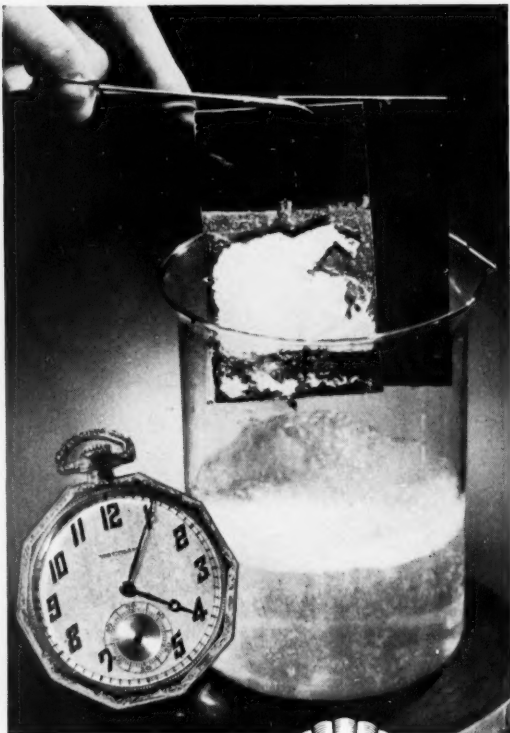
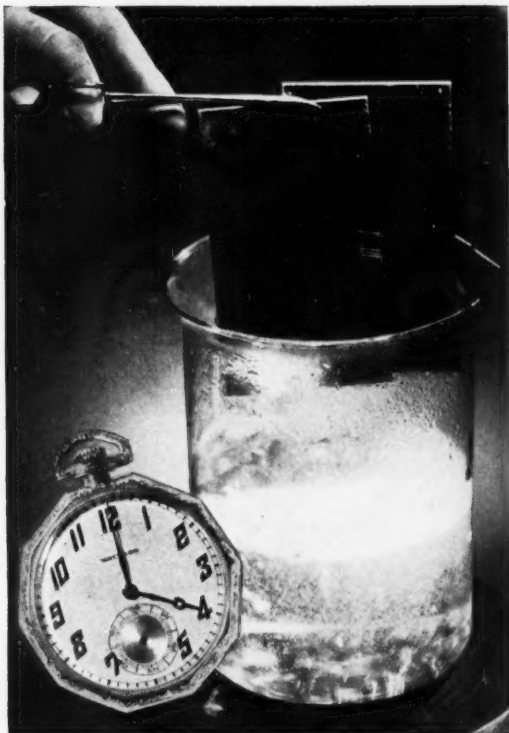
◀ **MRI's Wessel and Holmes:** They price-tag sulfuric acid from alternate sulfur sources . . . . . p. 42

**Sizing up potential plant sites?**  
**Don't overlook the railroads as fact-finders** . . . . . p. 49

◀ **Benzene makers** and buyers must consider: Is there a shortage or simply a price problem? . . p. 62

**OPS gives small drug and specialty makers a break, unfetters new products from controls** . . . p. 65

# Why long immersion in hot caustic won't harm **EPON RESIN** finishes



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# Chemical Week

Volume 71 Number 10  
September 6, 1952

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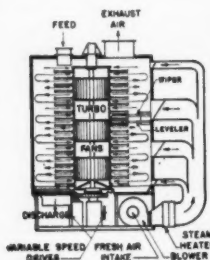
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## OPINION . . .

### Petrobenzene Goal

TO THE EDITOR: . . . You must have mighty long days in New York . . . because I see in your Market Letter mention of a DPA estimate of 130 million gallons of petroleum-based benzene a day by 1954 . . .

Or is DPA really setting such wide-eyed goals?

R. S. HARTHEN  
Tulsa, Okla.

*DPA is not that wide-eyed, CW fumbled typographically with a "day" instead of a "year."*—Ed.

### Too Soon for Claims?

TO THE EDITOR: . . . I have read your editorial on chlorophyll (Aug. 16) . . . Naturally, we are very much interested in what goes on in this chemical.

. . . Certainly, there seems to be sound evidence that chlorophyll in the right form and in the right dosage has a definite protective action against body odor. This is, however, neither supportive of many of the products on the market nor their many claims.

The opinion of this organization has been expressed in the past . . . that the future of chlorophyll can only be discovered through continuing research over a sufficient period of time to secure conclusive results—and that may be a matter of years.

GEORGE E. BURKE  
Vice President  
Strong Cobb Co. Inc.  
Cleveland, Ohio

### Ode to the Goat

TO THE EDITOR: . . . That pointed and critical editorial you wrote about chlorophyll and the way chlorophyll-containing products are being promoted . . . did a good deal of injustice to the goat . . .

Although I am no goat-fancier of long standing . . . I do think that you should know that that particular couplet raises the ire of all who are blending what they describe as "nature's magic ingredient" or "the green glamor stuff" into their products . . . to capitalize on the loudly proclaimed deodorant virtues it imparts . . .

The goat eats (among other things) forage that contains chlorophyll . . . which is oil-soluble . . . It is only water-soluble derivatives of chlorophyll—i.e., chlorophyllins . . . that are supposed to be potent . . .

Too, you'll hear that a goat would have to eat tons and tons of grass or alfalfa to equal the amount of chlorophyll present in most pet foods or tablets . . .

This isn't in support of those who





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NEW ISSUE

August 19, 1952

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## OPINION . . . . .

are indulging in the often senseless exploitation of chlorophyll items . . . it just is a word in favor of the goat . . .

R. S. WENDORF  
Long Island City, N.Y.

Thanks, Reader Wendorf. The "goat couplet" was cited, of course, to point up just how the public is sneering and scoffing at some of the razzle-dazzle activities of specialty makers. The distinction between chlorophyll and chlorophyllins is one CW has defined on several occasions—but one that we suspect the public overlooks or disregards.

Even chlorophyllin—magical as it is supposed to be—cannot camouflage the stench from some of the vulgar and ridiculous chlorophyll promotion. Compared with it the much-maligned goat is bland.—Ed.

## Feud about Fued

TO THE EDITOR: Unions have undoubtedly been highly beneficial to our economy, in most cases. They are now, however, causing some confusion in my mind.

The press is prone to describe their activities in numerous ways but now that they have started "Fueds" (CW, Aug. 23), I don't quite know what to think of them . . .

Please explain, and, if this is a new tactic, I would imagine that management would want to be prepared with a method of countering it . . .

BEN C. SMITH  
Lincoln Research, Inc.  
Toledo, Ohio.

Established by this inverted spelling: That some 143 CW subscribers are (a) eagle-eyed, (b) sharp spellers (c) have a keen sense of humor. One CW proofreader is now blackboarding: "There's no feud between King Fued and any Egyptian fuehrer."—Ed.

## Ill-Taken Example

TO THE EDITOR: I have read the letter of Mr. Carl S. Miner and your reply concerning the terms "catalyst" and "chemical catalyst" (Aug. 23).

Catalysis appears to be chemical (as

CW welcomes expressions of opinion from readers. The only requirements: that they be pertinent, as brief as possible.

Address all correspondence to: W. A. Jordan, Chemical Week, 330 W. 42nd St., New York 36, N.Y.

## MEMO to: Fibre Drum Users

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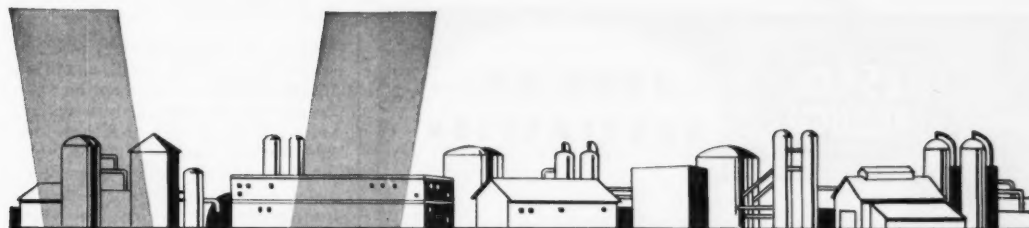
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Print Free	3 Hours	8 Hours
Dry Hard	3 Hours	18 Hours
Kaori Reduction	Passes 170%	Passes 60%
<b>GAS PROOF TEST</b>	Passes 180%	Passes 90%
<b>WEATHEROMETER TEST</b>	247 Hours	228 Hours
<b>RESISTANCE TESTS:</b>		
H <sub>2</sub> O @ 77° F.	72 Hours—Film O.E.	72 Hours—Film O.E.
H <sub>2</sub> O @ 212° F.	8 Hours—Film O.E.	5 Hours—Film O.E.

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**OPINION . . . . .**

opposed to physical) in every case but one in the sense that specific and identifiable chemical intermediates between reactants and catalysts are involved. It is not easy to identify the intermediates involved but as a more detailed knowledge of the various catalytic reactions is gained the evidence for chemical intermediates becomes more and more certain. One is at a loss to explain the selectivity of catalysis on any other basis. The one case of physical catalysis is the ortho-para hydrogen intra-conversion by magnetic substances.

Your choice of platinum black as an example of a physical catalyst was especially ill taken. The vast amount of significant literature on the specificity and trace poisoning of platinum and other metals surely indicates catalysis in this case to be chemical in nature.

A. G. OBLAD  
Associate Manager  
Research and Development  
Houdry Process Corp.  
Marcus Hook, Pa.

*We assure Reader Oblad that hereafter, with our necks securely pulled in, we'll stay off limbs.—Ed.*

**Up-to-Date Antibiotics**

TO THE EDITOR: "Antibiotics Up to Date" (Aug. 16) was as clear and terse a summary of this rapidly changing subject as I have seen . . .

JOHN R. HORSEY  
National Dairy Research Laboratories  
Oakdale, N. Y.

**MEETINGS . .**

Internat. Leipzig Fair, Fair Palace, Leipzig, Germany, Sept. 7-17.

Amer. Standards Assn., Museum of Science and Industry, Chicago, Sept. 8-10.

Instrument Soc. of Amer., conference and exhibit, Cleveland, Sept. 8-12.

National Chemical Exposition, Coliseum, Chicago, Sept. 9-13.

Chemical Industries Committee, third session, Geneva, Sept. 9-20.

Natl. Petroleum Assn., annual meeting, Traymore Hotel, Atlantic City, Sept. 10-12.

Tech. Assn. Pulp & Paper Ind., testing conference, Marshall Hall, Syracuse, N.Y., Sept. 10-12.

Packaging Mach. Mfrs. Inst., annual meeting, Homestead Hotel, Hot Springs, Va., Sept. 11-14.

American Chemical Society, 122nd National meeting Atlantic City, N.J., Sept. 14-19.



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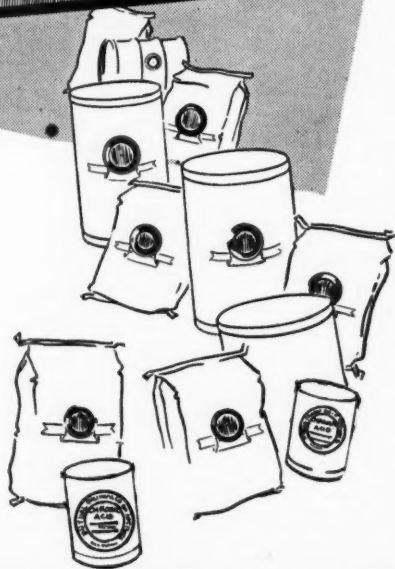
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## NEWSLETTER

Controls are still a tenet of Washington policy, but steel-strike politicking, the defense stretchout, and failure of many expected shortages to materialize have all combined to dispirit the controllers.

Most significant shift this week was the exit of Price Stabilizer Ellis Arnall, who was disaffected by the steel settlement, and the entrance of Tighe Woods, who had been administering rent control.

Of more direct interest to the chemical process industries was the resignation of Frank Bennett, chief of the Drugs, Solvents and Detergents Branch of NPA's Chemical Division. An old Washington hand (WPB, head of CPA's Chemical Division) he will return to Publicker Industries, Inc.

One controlling agency still very much alive despite a murder attempt by Congress is the International Materials Conference, a 28-nation group which allocates sulfur and other commodities.

Congress passed a rider forbidding the State Department to use any of its funds to support the program. The slick way out: simply transfer responsibility to DPA, which has the money.

But DPA's take-over won't stay unchallenged. Many congressmen, refuting IMC's claims not only of legal authority but also of serving the nation's best interests, will move to defeat State's clever gambit.

Almost a decade after application was made, a patent on napalm has been issued to the Army Chemical Corps. It was actually issued to Harvard Professor Louis Fieser, who assigned it to the Corps.

Royalty-free licenses will be granted to any reputable firm, say Chemical Corps lawyers.

Broad in scope, the patent (No. 2,606,107) covers the thickening composition as well as the gelled gasoline fuel. The thickening agent is composed basically of aluminum fatty acid soaps, aluminum naphthenate and unsaturated fatty acids.

Reason for the long delay in granting the patent: national security considerations.

Another military-inspired product, polychlorotrifluoroethylene, grew another cubit this week as Carbide and Carbon decided to spend \$1,315,000 on capacity expansion at Charleston, W. Va.

Sale of the material—volume of which even after the boost will still be practically pilot-plant—will be handled by Bakelite.

Union Carbide also said that it will not run the AEC gaseous diffusion plant to be built near Portsmouth, Ohio. Reason: AEC wants wider industrial participation, doesn't think it wise to have only one company capable of operating the diffusion process.

But Carbide will advise AEC on process design and equipment, will help the still-to-be-chosen contractor get started.

Over thirty companies are chipping in to set up Fractionation Research, Inc., a non-profit organization to compile and develop engineering information on fractionation problems. Chemical, petroleum, natural gas and construction engineering firms are on the roster.

You can expect further details later this year on Dow Chemical's new ion-exclusion process, a switch on ion exchange to separate ionic from nonionic materials in solution.

The process uses the salt form of strongly acidic or basic ion-exchange resins. When an ionic-nonionic mixture is passed through, the ionic portion comes out first. Small particle-size resins (50-100 mesh) appear to work best. Dowex 1, 2 and 50 are currently employed.

Dow is now operating a 70 gal./hr. unit. When patents are issued the process will be licensed.

Applications foreseen: Removal of ionic impurities from aldehydes, glycols, alcohols and the like.

Another resin development—this time by the National Bureau of Standards—will find its greatest utility in the electronics industry.

It's a new fast-curing "potting" resin for fabricating electronic assemblies. Called "AN-5," the new resin is a modified styrene containing acrylonitrile monomer, divinylbenzene, hydrogenated terphenyl, polystyrene and cobalt drier. Benzoyl peroxide and a promoter, "Pro-A," are added to the liquid before use.

The Department of Interior research project on desalting seawater (CW, Newsletter, July 12, July 19) is now getting under way.

Heading the program is Goodrich Lineweaver, who is now lining up an advisory group of academic and industrial scientists.

A new process to recover germanium from gas works' flue dusts has freed Britain from dependence on the U. S. for this element, widely used in the manufacture of transistor tubes.

Germanium is found (about 0.1%) in most British coals.

Swiss processes for manufacture of crystalline urea, methanol, formaldehyde and ammonia have been acquired from Inventa, the Swiss concern, by Vulcan Engineering Division (Cincinnati). Vulcan has exclusive rights to build plants in the U. S. and Canada.

Tougher competition for world markets from European chemical producers is in store if the Administration follows the recommendations of Ambassador William Draper, who just reported to President Truman. Says he, "More production . . . and better markets are essential to Europe's further economic development; . . . European markets no longer . . . serve."

Foretaste of what's ahead: A World Bank loan and an MSA grant will permit Iceland to build a 7 million ammonium nitrate fertilizer plant—big enough for Iceland's total needs, now imported.

But not all government money is going abroad. RFC has just loaned Southwest Fertilizer and Chemical Co. (El Paso) \$312,083 for a plant to make 20% phosphate from ground phosphate rock and spent acid from a near-by refinery. The firm now makes and sells fertilizers and insecticides.

"Every employee a stockholder" is an ideal that has been achieved at the Phillips (Texas) Refinery of Phillips Petroleum Co. This status was achieved last month when five rival groups within the Frank Phillips Men's Club contested to sign up every one of the 1,063 employees. They all reached the 100% goal within a few days of each other.

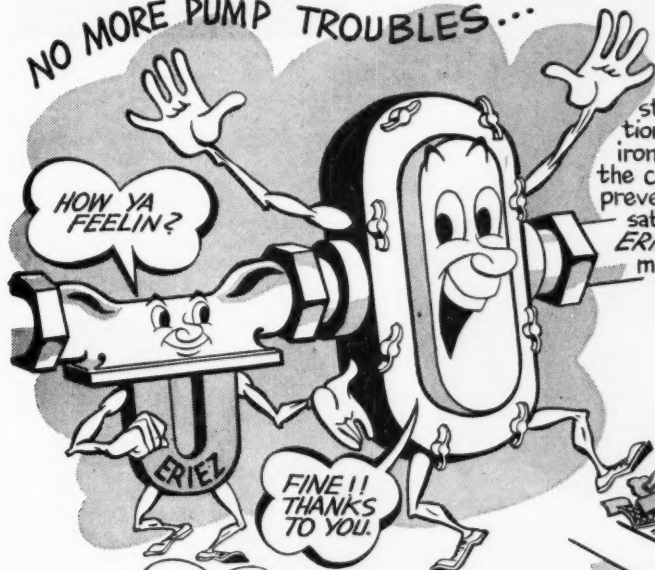
... The Editors





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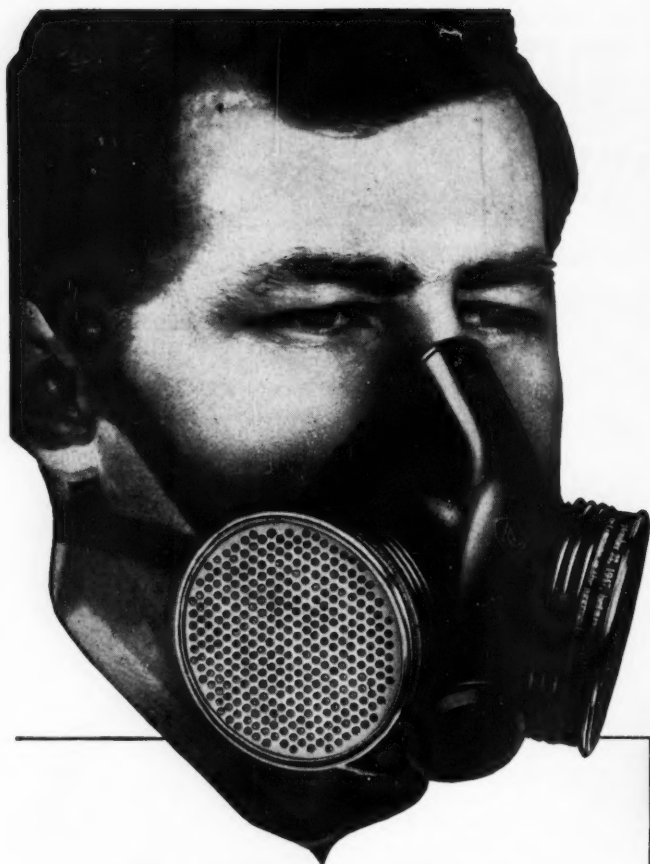
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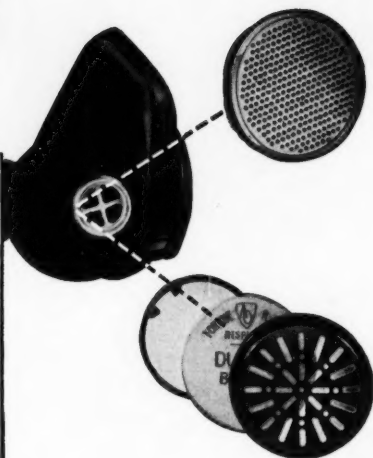
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## BUSINESS &amp; INDUSTRY . . . . .

**Allied Goes Outside**

Even Allied Chemical & Dye Corp., long boasting one of the strongest financial positions in the chemical industry, is finding that 1952's cost of living and cost of expanding puts a strain on the cash box. For the first time in the company's history it has gone outside to borrow money: A group of New York banks has loaned it \$50 million.

The loans are on 3% unsecured notes for three years; the company has the right of pre-payment at any time without premium.

Purpose in securing the money is to provide working capital and funds for construction of new plants as well as replacement and expansion of present facilities. Allied, in the throes of a tremendous postwar construction program, has ticketed \$75 million for capital expenditures this year, a like amount in 1953 if construction materials are available. This is on top of approximately \$226 million (of its own funds) it has spent for construction from the end of 1945 to the end of 1951.

Earlier this year the company sold some 200,000 shares of U.S. Steel common stock, its entire holdings of American Natural Gas common (94,200 shares) and some miscellaneous securities. The company probably improved its cash position by some \$10 million, of which perhaps \$1.5 million represented net profit on the investments.

Though the year's activities have undoubtedly taken a bite out of the \$127-odd million working capital the company had on hand December 31, no one need regard Allied as impoverished. As one company official told CW: "We're not broke by a long shot. It's just that when you get used to having over \$100 million you don't feel at ease jangling a few dollars."

**Aluminum—If**

The Aluminum Co. of America last week outlined its plans for primary aluminum production facilities near Skagway, Alaska. But the proposal still has a long way to go before it reaches reality.

Alcoa plans a \$400 million expenditure to construct power generating facilities and refining capacity to pro-

duce 400 million pounds of aluminum per year. Ultimately, it could double this capacity.

The company would raise the money privately, asking the government only for a 50% rapid tax write-off on actual smelting facilities and for a fair break on any stockpile buying.

The "Ifs": Alcoa can't go ahead without the permission of the Canadian Government and that of British Columbia, since the water for the power generation would have to be tunneled through from Canada.

The U.S. Government, too, must approve the project. It must decide whether the proposal can be fitted into its aluminum expansion goals, (CW, June 14). It must also authorize sale of land to Alcoa.

Canadian approval is the greatest hurdle, even though Alcoa has received some encouragement from authorities at Ottawa and Victoria, B.C. There could be a good deal of sentiment against the project since it would mean more competition for Aluminum Co. of Canada's Kitimat, B.C., plant, now under construction.

Alcan's first unit will be onstream in 1954. Alcoa's couldn't be ready before 1957. Ultimate plant capacities: Alcan, 1.1 billion pounds per year; Alcoa, 0.8 billion.

**Boost for Green**

The U.S. Customs Bureau has ruled that, effective Sept. 22, the ad valorem duty on chlorophyll and chlorophyll derivatives will be 12½%, rather than 7½%.

By boosting the rate, it shows that it considers these materials in the chemicals-medicinal class, rather than vegetable extracts used primarily for dyeing or coloring.

**Shift to Pugnacity**

Impatient for faster growth and for more aggressive bargaining, delegates to the sixth constitutional convention of the United Gas, Coke & Chemical Workers (CIO) have demanded a drive for industry-wide contracts and installed a younger and more vigorous president.

In the bellicose atmosphere of the four-day convention in Chicago, crisp, 40-year-old Elwood D. Swisher of Dunbar, W.Va., unseated genial Mar-

tin Wagner by a vote of 414.6 to 410.4 for the top office. Wagner had headed this union ever since it broke away from the United Mine Workers and affiliated with CIO 10 years ago.

Retained in office are Joseph R. Joy, who starts his third two-year term as vice-president after a 439 to 383 victory over Stephen G. McMullen; and Cecil Martin, who defeated Sam Angelocci for the secretary-treasurer post by 504-295.

**Union Rivalry:** In a 42-page report that turned out to be his presidential swan song, Wagner made these points:



SWISHER: Firm believer in organizing.

- The chemical industry, and employment therein, are expanding rapidly.
  - "Great segments" of the present force of chemical workers still are not unionized.
  - Just as a manufacturing plant must strive to "stand the acid test of competition," so Gas-Coke must keep pace with the vast technological, economic and social changes coming in this growing industry.
  - Accordingly, Gas-Coke must go to the unorganized workers "and organize them fast."
- Anti-Red Crusader: Swisher, the new president, previously served as chief of the West Virginia district, where membership swelled by more than 80% during the past two years. Several years earlier, as an international representative serving in several

districts, he was a leader in the move to purge Communists from the union.

Swisher also has been working as coordinator of the Carbide and Carbon council, made up of Gas-Coke locals whose members are employed by Union Carbide and Carbon.

**Strike Fund Planned:** During the next 90 days, all members of Gas-Coke are to vote on the question of adding 25¢ to the present \$1 monthly per capita levy, with most of the increase to go into a "strike fund."

Union officers have been directed to set up councils to battle for industry-wide bargaining. The union's goal is to have a paint council to negotiate a master contract with all paint companies, a drug council to bargain for all drug manufacturing employees, and so forth.

The delegates also called for more effort to get straight union-shop contracts, voted to grant honorary memberships to former members on retirement, and agreed to support the CIO Political Action Committee's line in the November election.

## Avant-Garde Pageant

There'll be a futuristic aura about the seventh biennial National Chemical Exposition at Chicago's spacious Coliseum, Sept. 9 to 13.

Exemplifying the chemical industry's forward-march in methods and materials during the past two years, the exposition will include seven displays of atomic energy equipment, one exhibit of natural and pile-produced isotopes, one display on radiography of metals, and four films about atomics and radioisotopes.

**Nucleonic Speeches:** In addition there'll be an all-day session (Sept. 11) on industrial applications of atomic energy, with such speech topics as: Tracer Experimentation, Utilization of Fission Products, Radiation to Promote Chemical Reactions, and Business Management in the Atomic Age.

Some 200 exhibitors are booked for the show, including five from abroad—Eldorado Mining & Refining, Ottawa, Canada; Federation of Belgian Chemical Industry, Brussels, Belgium; Schumacher'sche Fabrik, Bietigheim, Germany; Watford Chemical, London, England; and Watford (Canada), Toronto.

Alphabetically, the classifications of exhibitions run from "Abrasives" to "Wire Cloth," and will occupy nearly all of the Coliseum's floor space. Chairman of the exposition committee is H. W. Schultz of Swift & Co. Sponsor is the Chicago ACS section.



EXECUTIVE TRAINEES, COUNSELORS\*: There's no test like doing.

## Eliminating Guesswork

This month four young men at Hooker Electrochemical Co.'s Niagara Falls, N.Y. plant are getting a chance many a junior chemist or engineer dreams about: Take over the boss's job. These promotions, however, are only temporary, for the men are the first trainees selected in the company's new management development program designed to build executives and eliminate the guessing factor in promotions.

For a long time the company has used appraisal forms to rate employees' job performance. Two or three of an individual's superiors, who do not know the weighted value given to different points by which a man is rated, fill out the forms independently, and generally they agree in their estimate of his performance.

But in picking a man in advance for the next higher job, there has often been a wide difference of opinion. And though Hooker has had a supervisory and management training program conducted by the conference method, there was no assurance that a fellow doing a bang-up job in one spot would not be a washout when moved up a notch.

The new plan, the idea of industrial relations director Frank Dennis, will supplement the old program. It is designed to eliminate the possibility of making bad decisions in granting promotions, to make men better in their current positions as well as grooming them for the day when an

opening for a more important job develops.

**Two New Posts:** First step in the program was creating two new jobs known as area supervisors where the trainees would have the chance to assume the same types of responsibility generally within the superintendent's province. Each is responsible for half the company's operating departments, and works closely with department heads, foremen, and rank and file employees as well as top management.

When these two men are moved from their existing jobs to their new training spots, they leave vacancies in their "home" departments. This provides additional chances for trained men from a lower level of management to be moved to a more responsible job. In this way, men at all levels of management, and in many cases men in the ranks, will move up a step temporarily. Hooker figures that the weight of this responsibility will give them a greater appreciation of the problems facing their former supervisors, and they'll do their regular job better.

Tentatively the first four selected will serve in their new jobs about six months. Temporary area supervisors have been made out of a safety engineer (Joseph Tardiff, with Hooker since 1937) and a department head (John Sweeney, who also joined the company in 1937). A maintenance engineer (George Duckwall, with Hooker since 1940) has become a department head, and a personnel man (Alton Thorpe, also hired in 1940) personnel supervisor.

\* First to take part in Hooker's management development program, left to right: Joseph A. Tardiff, Alton V. Thorpe, Frank W. Dennis, F. L. Bryant, George E. Duckwall and John D. Sweeney. Dennis is director of industrial relations; Bryant, Niagara Falls plant supt.; the others are management trainees.



In weekly meetings with the plant superintendent, F. L. Bryant, and Dennis, the men will be advised of their progress in their new jobs. The older men will also review their work and give them constructive criticism.

As the program develops, the company will be building up a reservoir of trained talent. When a vacancy occurs, it will be unnecessary to train or test a man for a higher job.

**Morale Problems:** Although there appear to be decided advantages to this relatively simple method of providing for tomorrow's executive, there are some dangers in the plan too: What of the man who doesn't measure up to the job during his trial? Will there be a feeling that some men who have demonstrated capacity to handle a bigger job are "crown princes"? Will those picked expect that advancement is in the offing, and feel cheated if they don't get it in a reasonable time?

Hooker doesn't anticipate any such trouble. A fellow who doesn't measure up in one spot does not necessarily eliminate himself from consideration for training in another advanced position for which his talents may fit him. It is to his and the company's advantage, however, to learn ahead of time what jobs he cannot handle.

And the fellow who simply lacks the ability to advance to more responsible positions at least knows that the company has given him every chance it could. He cannot in fairness criticize management for not advancing him, nor for picking someone else for a coveted spot. The company thinks its system will prevent, not foster, bitterness of this kind.

Several men in a department may train for any given job, and all demonstrate the ability to assume its responsibilities. Hooker does not anticipate any bad feeling toward those who have had such training, nor any resentment if promotions are not made. For no man is told that there are any vacancies ahead, and there are no commitments made that he is in line for a better job within the near future.

The plan has the enthusiastic endorsement not only of the president, R. L. Murray, but of the union too. For it gives plant workers as well as salaried men an opportunity to advance, and as union president Jay Martinez says, "We are vitally interested in having an effective, efficient and human supervisory and management staff. The better the supervision, the less likelihood of grievances and problems, the greater assurance of happiness on the job."



WIDE WORLD

## Last or Latest?

TIGHE E. WOODS, who this week succeeded Ellis Arnall as director of the Office of Price Stabilization, should find supply-demand conditions in the chemical industry, at least, much less critical than they were six months ago when Arnall took over from Mike DiSalle. Arnall supposedly quit because Congress weakened OPS's power and cut administration funds. Industry generally feels Congress should have gone further in scuttling controls, hopes Woods is the last controller—and that his tour of duty is short.

## No Clandestine Split

**There'll be no bisection of Canadian Industries, Ltd., without first consulting with CIL directors, the two big owners of that firm have promised.** Du Pont and Imperial Chemical Industries, which have been ordered by a U.S. District Court to dissociate themselves for strict compliance with anti-trust laws, have assured CIL that it will have a chance to speak its piece before the two parent companies adopt any plan to cut CIL in two.

Each of the two parent companies owns 42% of CIL's common stock. Federal Judge Sylvester Ryan has ruled that if Du Pont and ICI don't want to sell their shares in CIL, they can divide the Canadian concern into two new companies, with a corresponding division of physical properties.

**May Enter Case:** CIL's top officers, Chairman George W. Huggett and President H. Greville Smith, say that their company may ask to be heard when the parent companies present their divestiture plan to the court.

Once before, CIL sought to enter this case during the hearing of testimony in New York, but Ryan ruled then that CIL stay on the sidelines.

News of the Du Pont-ICI promise came in a joint letter from Huggett and Smith to all other shareholders. It said CIL "has received the assurance of ICI and Du Pont that, if they should decide to submit a plan involving segregation of the plants and properties of the company, they will first consult with the CIL board of directors as to the effect of such plan on the interests of the preferred and minority common shareholders."

## LEGAL . . . . .

**Battle in Boston:** Cemical companies are watching the "delayed tack" lawsuit between S. D. Warren Co. of Boston and Nashua Gummed and Coated Paper Co. of Nashua, N.H., to see if the district court's decision in favor of Nashua will stick. Warren is appealing the case, and indications this week are that the case will be called on the circuit court's crowded calendar in December. Two months ago, district court ruled that Warren infringed a Nashua patent for an adhesive coating that remains sticky for minutes or even days after heating, as desired. Warren claims the patent is invalid, and that in any case there was no infringement because "the Warren company is working in a field which Nashua all along has said would not produce the desired results."

**Oil Firms in Hot Water:** The coming of cooler weather seems to be the signal for the Truman Administration to try to put the heat on the big oil companies. Attorney General McGranery has filed three civil suits to try to recover more than \$67 million from Socony-Vacuum, Standard of New Jersey, Standard of California, The Texas Company and some of their subsidiaries. The allegation is that those companies overcharged the Mutual Security Agency by that amount for oil sent abroad.

In another stage of running the gauntlet, the oil companies got a slap when President Truman authorized the Senate's Small Business Committee to make public a 900-page FTC report accusing certain oil firms of engaging in a world-wide cartel that tended to gouge American consumers and taxpayers. This report has been subpoenaed by a Federal Grand Jury in Washington that is investigating oil monopoly charges. Companies ordered to send representatives to the Grand Jury this week are the four concerns

named in the over-charge suit, plus Gulf and two British owned companies, Anglo-Iranian and Royal Dutch Shell.

## Chemical Confab

Leaving for Europe this week are labor, industry and governmental delegates to the third biennial conference of the chemical industries committee of the International Labor Organization, meeting next week in Geneva, Switzerland.

Although President Truman has not announced the names of the U.S. delegates, it was expected that the chief delegate from this country will be Charles C. Concannon, general handy-man in chemicals for the Commerce Department and the NPA.

Chemical companies and unions have shown increasing interest in the work of this committee, possibly because it affords an opportunity to compare notes with representatives of the world's 18 principal chemical manufacturing countries outside the iron curtain.

On the agenda for this meeting is an ILO report stating that there is a growing shortage of chemical manpower on all levels, due both to long-range and temporary (defense) expansion. Among the countries listed as short-handed in chemical workers are the U.S., Britain, France, Belgium and South Africa. Also to be discussed: vocational training and the problem of day work vs. shift work in the chemical industry.

## KEY CHANGES . . .

**Robert K. Mueller:** To general manager, Monsanto Chemical Co.'s Plastics Division, St. Louis, Mo.

**Ernest Hart:** To executive vice-president, Food Machinery and Chemical Corp.'s Chemicals Division, New York, N.Y.

**F. Drake Parker:** To manager, Western Headquarters, Chemical Plants Division, Blaw-Knox Co., Tulsa, Okla.

**William S. Vaughn:** To first vice-president, Tennessee Eastman Co. and Texas Eastman Co., Kingsport, Tenn.

## EXPANSION . . . . .

**Sulfur:** Phillips Chemical has begun operation of a Crane County, Tex., plant to extract elemental sulfur from natural gas. The plant—Phillips' second—is producing about 55 tons/day. The material will, in the future, be used to make sulfuric acid for Phillips' ammonium sulfate facilities near Houston.

**Cold Rubber:** The government syn-

## ESSENTIAL METAL ALLOTMENTS FOR NEW CHEMICAL CONSTRUCTION

Company, Location	Product	Amount
Seaboard Oil, Park County, Wyo.	Sulfur	\$ 991,700
Swift & Co., Norfolk, Va.	Sulfuric acid	18,800
Allied Chemical & Dye, E. St. Louis, Ill.	Sulfuric acid	1,663,000
Armour & Co., West Nashville, Tenn.	Sulfuric acid	235,600
Diamond Alkali, Houston, Tex.	Chlorine	8,750,000
Algonquin Chemical, Huntsville, Ala.	Chlorine, caustic	12,700
Davison Chemical, Ridgewood, Fla.	Phosphoric acid, uranium, phosphates	12,410,000
Virginia-Carolina, Nichols, Fla.	Phosphoric acid, phosphates	4,500,000
Victor Chemical, Chicago Heights, Ill.	Dicalcium phosphate	80,000
Linde Air Products, Tonawanda, N. Y.	Oxygen, nitrogen, argon	325,000
Koppers Co., Port Arthur, Tex.	Ethylene oxide	8,768,550
Union Carbide & Carbon, Institute, W. Va.	Ethylene oxide	1,460,500
Allied Chemical & Dye, Buffalo, N. Y.	Maleic anhydride	4,668,000
National Petrochemicals, Tuscola, Ill.	Ethyl alcohol, chloride	9,100,000
Columbia-Southern, New Martinsville, W. Va.	Benzene	2,225,000
Koppers Co., Kuba, Pa.	Benzene	240,535
Union Carbide & Carbon, Marietta, Ohio	Phenol	4,950,000
Rohm & Hass, Houston, Tex.	Phenol, acetone	3,760,000
Veisical Corp., Memphis, Tenn.	Phenol	75,000
Union Carbide & Carbon, Bound Brook, N. J.	Styrene	119,600
Montrase Chem. of Calif., Henderson, Nev.	Monochlorobenzene	36,200
Penna. Salt, Calvert City, Ky.	Lindane	903,401
Union Carbide & Carbon, Bound Brook, N. J.	Phenolic resins	203,700
Union Carbide & Carbon, So. Charleston, W. Va.	Vinyl resins	187,000
General Tire & Rubber, Calvert City, Ky.	Vinyl chloride, resins	6,000,000
Union Carbide & Carbon, So. Charleston, W. Va.	Polyethylene	1,405,700
Hercules Powder, Hattiesburg, Miss.	Fluorene	1,315,000
Du Pont, Waynesboro, Va.	Dresinate	48,570
Allied Chemical & Dye, Buffalo, N. Y.	Cellulose acetate flake	7,250
Schenley Distillers, Lawrenceburg, Ind.	Dyes	1,117,519
Sharp Duhamel, War Point, Pa.	Antibiotics	179,525
Calbio Chemicals, Perry, Ohio	Pharmaceuticals	200,000
Allied Chemical & Dye, Solvay, N.Y.	Fungicides	750,000
American Cyanamid, Bound Brook, N. J.	Chemicals	207,000
Calvery Chemical, Calvery, Pa.	Chemicals	184,300
Celanese, Bishop, Tex.	Chemicals	165,000
Dow Chemical, New York Harbor	Chemicals	82,150
Givaudon Corp., Delawanna, N. J.	Chemicals	1,450,000
B. F. Goodrich Chemical, Avon Lake, Ohio	Chemicals	48,000
Mathieson Chemical, Niagara Falls, N. Y.	Chemicals	269,991
Mathieson Chemical, Morgantown, W. Va.	Chemicals	500,000
Monsanto Chemical, Springfield, Mass.	Chemicals	200,000
John Puhl Products, Salem, Va.	Chemicals	209,600
Royette, Inc., St. Paul, Minn.	Chemicals	200,000
Stauffer Chemical, Toole County, Utah	Chemicals	29,662
	Chemicals	3,087,000

thetic rubber plant at Louisville, Ky., operated by the Kentucky Synthetic Rubber Corp., has been converted to production of cold rubber. Conversion cost \$1.3 million.

• The company is making plans to buy the plant when the government turns over its synthetic plants to private industry. In doing so, it perhaps has greater problems than those of many other plant managements since it is owned by 11 companies which do not themselves make tire rubber.

• **Softeners:** Glyco Products has begun production of monoglycerides at its new Williamsport, Pa., plant. It is gradually shifting its civilian production to Williamsport from Natrium, Pa. After Nov. 1, only defense-supporting materials will be made at Natrium.

• **Synthetic Fiber:** American Viscose and Monsanto Chemical's Chemstrand subsidiary last week previewed goods

made of its Acrilan acrylic fiber. They will go on sale throughout the country Sept. 8.

• On the technical end, Acrilan is now identified as "chiefly acrylonitrile," rather than as a 85% acrylonitrile, 15% vinyl acetate polymer.

• Productionwise, the company is bringing into production its 30 million pound/year plant at Decatur, Ala. Continued full production will not be possible until parent Monsanto's acrylonitrile plant at Texas City goes on-stream. Present completion date: early 1953.

## COMPANIES . . . . .

Mathieson and Squibb stockholders will vote on Sept. 30 on the plan approved by directors of the two companies to merge the concerns. If the stockholders endorse it, the merger will become effective on Dec. 1. Squibb will then become an operating division of Mathieson.

## CURRENT LIST OF DPA-CERTIFIED FACILITIES

Company, Location	Product	Amount Certified	% Certified
Sullivan Mining, Shoshone County, Idaho	Sulfuric acid	\$ 4,352,370	70
Engle-Picher, Galesburg, Kans.	Sulfuric acid	3,565,529	70
Dolomite Reduction Corp., Ada, Okla.	Chlorine	7,045,960	45
U. S. Steel, Gary, Ind.		5,495,100	30
Allied Chem. & Dye, Philadelphia, Pa.	Metallurgical coke	14,192,000	45
Monsanto Chemical, Everett, Mass.	Phthalate esters	818,400	45
Monsanto Chemical, St. Louis, Mo.	Phthalate esters	2,207,800	45
Commercial Solvents, Terre Haute, Ind.	Tricresyl phosphate	780,000	45
Wyeth Pharmaceuticals, West Chester, Pa.	Triethyl phosphate	232,900	45
	Antibiotics	3,270,232	60
		1,566,707	30
Merck & Co., Danville, Pa.	Niacin	714,730	40

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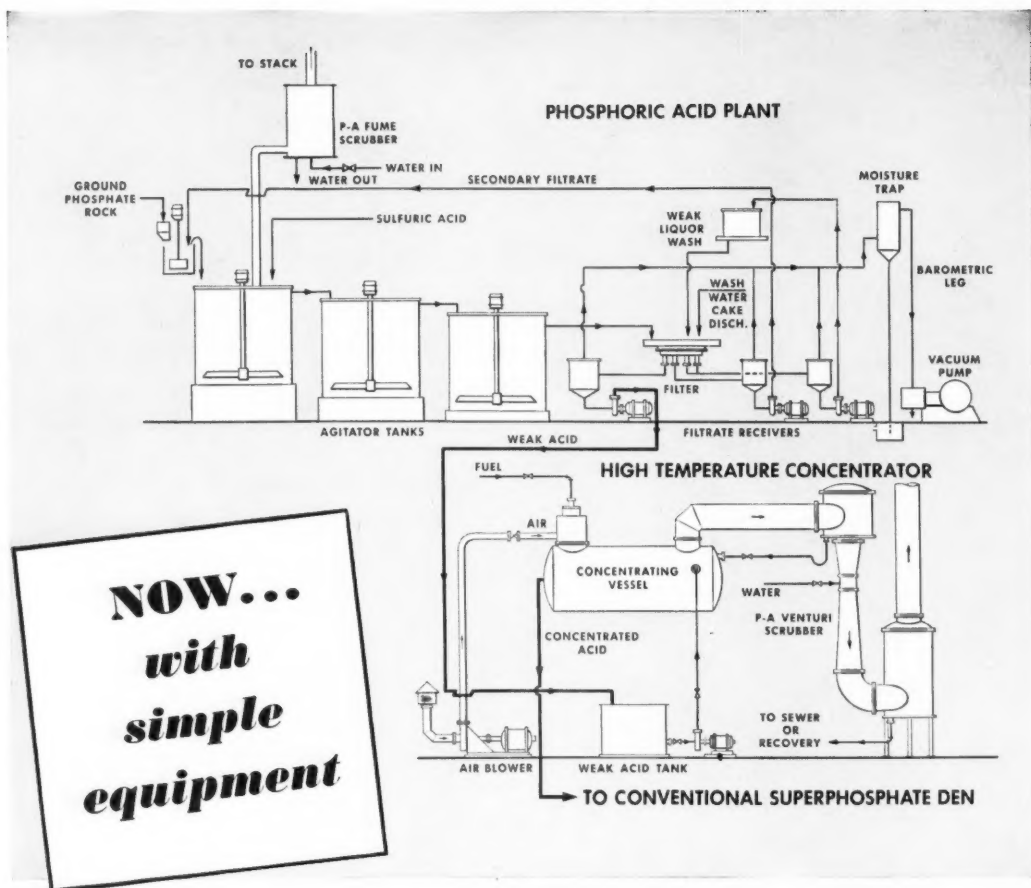
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The diagrams above illustrate successful Chemico methods for (1) the production of phosphoric acid by the wet process; (2) the concentration of the phosphoric acid in a Chemico high temperature concentrator. By adding these facilities to your plant, enriched superphosphates (26 to 28% A.P.A.) or triple superphosphates (up to 47% A.P.A.) can readily be produced.

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## New Chemicals for Industry

On this and the following pages **CHEMICAL WEEK** presents the results of an industry-wide survey of chemical and specialty products introduced since November 1951.

Product information, in each case, is the manufacturer's; chemicals and specialties are listed separately in alphabetical sequence with technical descriptions, suggested uses and producers' names.

For your convenience an alphabetical directory of producers' addresses will be found at the rear of this report.

### CHEMICALS

#### ACETOGUANAMINE

$\text{CH}_3\text{C}_6\text{H}_4\text{N}_2(\text{NH}_2)_2$ . M.W. 125.15; white crystalline solid; density, 1.44 at 30°C.; M.P. 270°C. (dec.); insoluble in acetone, benzene, chloroform, dioxane, ethyl acetate; slightly soluble in butyl cellosolve, ethanol, methyl alcohol, water. Chemical properties: Amino groups can be acetylated, alkylated, or removed by hydrolysis. Forms resins with formaldehyde. Suggested uses: Intermediate for the preparation of dyeing aids, surface-active agents, protective colloids, flame-proofing materials. Acetoguanamine resins are useful in surface coatings and in paper, leather and textile finishings. Availability: trial-lot quantities. American Cyanamid Co.

#### 1-ACETOXY BUTADIENE

$\text{CH}_3\text{COOCH}_2\text{CHCHCH}_2$ . Colorless liquid. M.W. 112.12; B.P. 51.5°C. at 30 mm. Hg; R.I. at 30°C. 1.4642. Chemical properties: Undergoes characteristic diene reactions. Suggested uses: Diels-Alder reaction with ethylenic compounds produces substituted ring structures of interest in the synthesis of pharmaceuticals and synthetic odorants. Availability: research quantities. Carbide and Carbon Chemicals Co., Div. of Union Carbide and Carbon Corp.

#### ACRYLAMIDE

$\text{CH}_2\text{CHCONH}_2$ . M.W. 71.08; white crystalline solid; density, 1.122 at 30°C.; M.P. 84.5°C.; B.P. at 10 mm., 116°C.; very soluble in acetone, butyl cellosolve, dioxane, ethanol, ethyl acetate, methyl alcohol, water; insoluble in benzene, heptane. Chemical properties: Amide group can be hydrolyzed, esterified, or reacted with formaldehyde. Alcohols, amines, etc., may be added to the double bond. Polymerizes by itself and can be copolymerized with other ethylenic monomers. Suggested uses: As an intermediate for resins for adhesives, fibers, plastics and surface coatings. Polyacrylamide is a dispersant and thickening agent and may be used in paper and textile treatment. Availability: trial-lot quantities. American Cyanamid Co.

#### ALLYL METHACRYLATE

$\text{C}_6\text{H}_5\text{O}_2$ . M.W. 114.14; B.P. 63°C. @ 17 mm; R.I. @ 20°C. 1.4358; Sp.G. 0.9335. Miscible with organic materials; insoluble in water; esterlike odor. Chemical properties: The allyl and methacrylate residue may react by addition of various reagents such as halogens, amines, mercaptans, alcohols, halogen acids and dienes. Both groups can be polymerized to yield bulk, suspension or emulsion polymers. Suggested uses: As cross-linking monomers for use with dental resins, polyesters, protective coatings, and plastic sheets. Available in commercial quantities. American Monomer Corp.

#### AMINOAZOTOLUENE HYDROCHLORIDE (Garnet GBCP Base)

$(\text{C}_6\text{H}_4\text{CH}_2\text{N})_2\text{N}(\text{CH}_2\text{C}_6\text{H}_4\text{NH}_2\text{HCl})$ . M.W. 261.76; free amine soluble in alcohol, insoluble in

water. Properties: A new highly purified grade that gives no tars on diazotization. Suggested uses: As intermediate for dyes and coupling agent for textile dyeing. Availability: commercial quantities. The Hilton-Davis Chemical Co. Div.

#### 3-AMINOPROPANOL

$\text{HO}(\text{CH}_2)_3\text{NH}_2$ . M.W. 75.11; colorless liquid; density 0.9786 at 30°C.; F.P., 12.4°C.; B.P., 85°C. (10mm.). 115°C. (50mm.), 146°C. (200mm.), 168°C. (500mm.). Heat of vaporization, 14.6 kcal./mole; Flash point, (Tagliabue open cup), above 80°C.; R.I. at 25°C. 1.4597; viscosity, 20.6 cp. at 30°C.; miscible with acetone, chloroform, ethanol, ethyl acetate, water; slightly soluble in benzene, heptane. Chemical properties: Undergoes reactions typical of the amino and hydroxyl groups, the amino group being the more reactive. Suggested uses: Synthetic intermediate; corrosion inhibitor; dyeing additive; neutralizing agent; reducing agent for certain nitrobenzenes; intermediate for soaps and for polyester-polyamide resins. Availability: trial-lot quantities. American Cyanamid Co.

#### N - (3-AMINOPROPYL) -2-METHYL-5-ETHYL PIPERIDINE

M.W., 204.208; Sp.G., 0.886 at 20/20°C.; B.P., 91°C. at 3mm. Hg; colorless liquid. Chemical properties: Undergoes reactions typical of primary and tertiary amines. Suggested uses: Intermediate for the preparation of pharmaceuticals, textile-finishing compounds, resins, agricultural chemicals. Availability: research quantities for experimental use. Carbide and Carbon Chemicals Co., a Div. of Union Carbide and Carbon Corp.

#### AMMONIUM CHROMATE

$(\text{NH}_4)_2\text{Cr}_2\text{O}_7$ . M.W. 150.21; D. 1.91 at 12°C.; solubility in water, 28.8% at 30°C.; on boiling, solution liberates ammonia, solid loses ammonia on heating, changing to the dichromate which decomposes further at 180°C. with evolution of heat and gases; bright yellow finely granular pulverulent solid having a slightly ammoniacal odor. Suggested uses: similar to other soluble chromates in systems where presence of a non-volatile alkali is objectionable; in textile mordants; printing inks; photographic chemicals; manufacture of catalysts; and the insolubilization of glue and other materials. Availability: Pilot-plant quantities, 99.0%  $(\text{NH}_4)_2\text{Cr}_2\text{O}_7$  minimum. Mutual Chemical Co. of America.

#### AMMONIUM GLUCONATE

$\text{NH}_4\text{C}_6\text{H}_{11}\text{O}_7$ . M.W. 213.19; soluble in water, 31.6 gm/100 ml at 25°C.; white crystalline powder; suggested uses: Latent acid catalyst for textile printing and other applications; mild diuretic and expectorant; sequestrant; emulsifier for processed cheese and mayonnaise. Commercially available. Chas. Pfizer and Co., Inc.

#### BARIUM SELENITE

$\text{BaSeO}_3$ . M.W. 264.32; white crystals, sparingly soluble in water. Suggested use: Preparation

of other selenites. Grades: technical, pure. Availability: pilot-plant scale. City Chemical Corp.

#### BARIUM SULFAMATE

$\text{Ba}(\text{NH}_2\text{SO}_2)_2$ . M.W. 329.5; white crystalline powder, soluble in water. Suggested use: Preparation of other sulfamates. Grades: technical, pure. Availability: pilot-plant scale. City Chemical Corp.

#### BENZOGUANAMINE

$\text{C}_6\text{H}_5\text{C}_6\text{H}_4\text{N}_2(\text{NH}_2)_2$ . M.W. 187.20; white crystalline solid; density, 1.40 at 30°C.; M.P., 227.03°C.; insoluble in acetone, benzene, chloroform, water; slightly soluble in butyl cellosolve, ethanol, ethyl acetate, methyl alcohol; soluble in dioxane. Chemical properties: Amino groups can be acetylated, alkylated, or removed by hydrolysis. Forms resins with formaldehyde. Suggested uses: Intermediate for the preparation of dyeing aids, surface-active agents, protective colloids, flame-proofing materials. Benzoguanamine resins are useful in surface coatings and in paper, leather and textile finishings. Availability: trial-lot quantities. American Cyanamid Co.

#### BIS-(2-HYDROXY-3,5-DICHLOROPHENYL)-SULFIDE (LOROTHIDOL)

$(\text{C}_6\text{H}_3\text{OCH}_2)_2\text{S}(\text{C}_6\text{H}_3\text{OCH}_2)_2$ . M.W. 356.1; M.P. 185.7-187.7 (corr.); soluble in dilute alkali; slightly soluble in alcohol. Properties: A powerful bacteriostat and fungistat effective at extremely low concentrations. Phenol groups may be condensed to alter characteristics. Suggested uses: In soap and cosmetics as a deodorant; in textile, laundering, etc. as a germicide; in pharmaceuticals as a germicide and fungistat. Commercially available. The Hilton-Davis Chemical Co. Div.

#### $\alpha$ -BROMOSTEARIC ACID

Light yellow waxy solid prepared from 97% pure stearic acid. Chemical properties: The presence of the reactive bromine atom and carboxyl group on the long hydrocarbon chain make possible the preparation of a wide variety of special surface active compounds of possible interest to the petroleum, rubber, cosmetic, textile, and metal working industries. Availability: large experimental quantities. Sapon Laboratories, Inc.

#### N-tert-BUTYLACRYLAMIDE

$\text{CH}_3\text{CHCONHC}_4\text{H}_9$ . M.W. 127.18; white crystalline solid; density, 1.015 at 30°C.; M.P., 128-130°C. with polymerization; soluble in acetone, butyl cellosolve, chloroform, dioxane, ethanol, ethyl acetate, methanol; slightly soluble in benzene, heptane, water. Chemical properties: Typical reactions of the activated double bond and the substituted amide group; polymerizes by itself and copolymerizes with other ethylenic monomers. Suggested uses: Resin intermediate for use in molding compositions, surface coatings, fibers, textile and paper finishes. Availability: trial-lot quantities. American Cyanamid Co.

# *The Case of the Acid Carboy by Gayner*

*a continued story by  
one of America's  
oldest glass manufacturers*

## CHAPTER SIX

Almost 60 years of continuous service to the chemical and process industries is an enviable record for ANY shipping container—and Gayner Glass Carboys are still winning new friends and users through sheer performance and economy.

Gayner Carboys are unquestionably the outstanding "safety package" for transporting, storing and dispensing acids, corrosive liquids and other handle-with-care products. Strong, heavy, uniform walls of glass afford maximum protection and visibility—thorough annealing assures greatest shock resistance—and by its very nature, GLASS guarantees highest resistance to chemical attack, absorption of fluids and pitting or decomposition.

From an economy standpoint, no other container of equal size and versatility can match a Gayner Glass Carboy. It introduces lowest possible maintenance and return costs, and the complete unit is convenient to handle and store. Approved by the MCA as the FIRST standard 13-gallon carboy.

*Write today for the illustrated Gayner brochure giving prices and shipping details on carboy bottles, boxes and cartons.*

IMMEDIATE DELIVERY ON ALL TYPES



### TIME-PROVEN CARBOY POINTS

- 1 Gayner glass is fully annealed. Maximum shock-resistance for safety.
- 2 Uniform, heavy walls. Strong, durable, greatest serviceability.
- 3 Easy to clean because it's GLASS. Re-usable for same or different liquids.
- 4 Resistant to chemical attack. No pores or pits to absorb water or chemicals.
- 5 Bottle held firmly by cork wedges. All corners of box securely cushioned.
- 6 Light in weight—low return costs.
- 7 Box is clear, sturdy, seasoned white pine. Bottle easy to install; convenient to handle and store.
- 8 Approved by Bureau of Explosives. MCA Standard 13-gallon carboy bottles.

# GAYNER

SALEM, NEW JERSEY

MANUFACTURERS OF FINE GLASS CONTAINERS



# GLASS WORKS

FOUNDED IN 1874

FOR CHEMICALS, DRUGS, OILS, WINES, JUICES . .

**tert-BUTYLAMINE**

(CH<sub>3</sub>)<sub>3</sub>CNHa. M.W. 73; Sp.G. 0.690, 25°C./4°C.; R.I. 1.375, 25°C.; B.P. 44-50°C. (760 mm.). Miscible in all proportions with water and alcohol; soluble in common organic solvents. Chemical properties: Undergoes characteristic reactions of primary aliphatic amines. Gives stable monomeric adducts, (CH<sub>3</sub>)<sub>3</sub>CNCH<sub>2</sub>R, with formaldehyde and other aliphatic aldehydes. Gives stable carbodiimide, (CH<sub>3</sub>)<sub>2</sub>CN<sub>2</sub>CN(CH<sub>3</sub>)<sub>2</sub>. Suggested uses: Intermediate in preparation of rubber chemicals, oil and grease additives, insecticides, fungicides, bactericides, surface-active agents, corrosion inhibitors, pharmaceuticals, textile chemicals and dyestuffs. Availability: pilot-plant quantities. Rohm and Haas Co.

**n-BUTYL BENZOATE**

Colorless liquid. N.W. 178.22; Sp.G. 1.0073 at 20/20°C.; B.P. 250.0°C. at 760 mm.; V.P. 0.1 mm. Hg. at 20°C.; Fr.P. 21.5°C.; sol. in water, <0.01% by wt. at 20°C.; sol. water in, 0.3% by wt. at 20°C.; Flash point 225°F. (Cleveland open cup). Chemical properties: Undergoes usual reactions of esters on reduction or other treatment; with customary catalysts undergoes ester exchange to form other esters; reactive source of benzoyl radical. Uses: slow evaporating solvent for inks, dyes, resins; chemical intermediate; alkyl resin manufacture; odorant. Availability: commercial quantities. Carbide and Carbon Chemicals Co., Div. of Union Carbide and Carbon Corp.

**BUTYL 2-ETHYLBUTYL MALEATE**

M.W., 256.3; Sp.G., 0.981 at 20/20°C.; B.P., 155°C. at 1 mm. Hg. Chemical properties: Undergoes Diels-Alder reaction with conjugated dienes and addition reactions characteristic of compounds containing the ethylenic linkage; polymerizes and copolymerizes with other ethylenic monomers. Suggested uses: Preparation of resins for use in coatings, molded products, and textile specialties. Availability: research quantities. Carbide and Carbon Chemicals Co., Div. of Union Carbide and Carbon Corp.

**CALCIUM p-AMINOSALICYLATE**

(C<sub>7</sub>H<sub>6</sub>NO<sub>2</sub>)<sub>2</sub> Ca. 1/2 H<sub>2</sub>O. M.W., 353.34. Contains not less than 98.0% (C<sub>7</sub>H<sub>6</sub>NO<sub>2</sub>)<sub>2</sub> Ca. 1/2 H<sub>2</sub>O; white powder; sol. in water 19.7% at 20°C. Use: The same as sodium para-aminosalicylate in combination with streptomycin in treatment of tuberculosis. Particularly useful where sodium is contraindicated or where the sodium salt is not well tolerated. Calco Chemical Div., American Cyanamid Co.

**CALCIUM, CRYSTALLINE**

M.W., 40.08; Density at 20°C., 1.54; Hardness (Moh's scale) 2.0; Resistivity (Microhm-cm) at 20°C., 4.6; M.P., 851°C.; B.P., 1842°C.; a free-flowing crystalline powder ranging in particle size from 50 to 400 mesh. A new and unique form of metallic calcium, the crystals act like a reactive chemical rather than a passive metal. The material is unusually pure and easily fluidized. Suggested uses: For the reduction of oxide ores, deoxidizing, alloying and desulfurizing. Typical analysis: Mg, 0.6%; Fe, 0.04%; Pb, 0.01%; Ba, 0.002%; Al, 0.002%; Sn, 0.001%; sodium chlorides 0.4%; Nitrogen, 0.0015%. Calcium oxide, 2.5%. Purity 94-97%. Availability: pilot-plant quantities. Ethyl Corp.

**2-CHLORO-4-AMINOBENZOIC ACID (CAB)**

C<sub>6</sub>H<sub>4</sub>CINH<sub>2</sub>COOH. M.W., 171.5. Chemical properties: Undergoes usual reactions of aromatic amino acids; amphoteric, soluble in acidic and basic solutions. Suggested uses: As a metabolic inhibitor, to suppress the synthesis of methionine. Availability: Research quantities. Krishell Laboratories, Inc.

**5-CHLOROKYNURENIC ACID, ETHYL ESTER, AND DERIVATIVES.**

5-Chloro-4-hydroxy-2-carboxyoxo quinoline. C<sub>8</sub>H<sub>5</sub>NOHClCOOC<sub>2</sub>H<sub>5</sub>. M.W., 251.67; M.P., ca. 197; soluble in hot alcohol, acetone, insoluble in water. Properties: Hydroxyl group replaceable by halide; can easily be de-esterified and decarboxylated to give substituted quinolines. Suggested uses: As intermediate for pharmaceuticals and dyestuffs. Commercially available. The Hilton-Davis Chemical Co. Div.

**4-CHLORO-6-TOLOXYACETIC ACID**

(CH<sub>3</sub>)<sub>2</sub>CClC<sub>6</sub>H<sub>3</sub>OC<sub>2</sub>H<sub>4</sub>COOH. Assay approximately 90%; white to grey granular solid. Suggested use: Translocorin herbicide recommended for greater effectiveness against certain broadleafed

weeds, and for greater safety in crops such as rice, flax, and some legumes. Availability: commercial quantities. Monsanto Chemical Co.

**CHROMIC FORMATE, BASIC**

Cr<sub>2</sub>(HCOO)<sub>3</sub>(OH)·4H<sub>2</sub>O. M.W., 577.11; basicity, 22.2%; soluble in water with less hydrolysis than chromic acetate; grey-green needle-like crystals. Suggested uses: In textile industry for Vigoreux and skein printing where a high-chromium formate or a solid form is advantageous; to prevent premature formation of color lakes; in chrome tanning where presence of a formate is desired. Availability: in laboratory quantities, 39% Cr<sub>2</sub>O<sub>3</sub> minimum. Mutual Chemical Co. of America.

**CHROMIC PHOSPHATE**

CrPO<sub>4</sub>·XH<sub>2</sub>O. Fine bluish-green amorphous powder. R.I., 1.61. Suggested uses: Metal protective pigment in new single-package vinyl wash primer applications; for protection of steel against fresh water, salt fog; for protection of aluminum and galvanized iron. Available in semi-commercial quantities. National Lead Co.

**CITRAZINIC ACID**

C<sub>6</sub>H<sub>5</sub>NO<sub>2</sub>. M.W., 155.11; yellowing powder with green tinge; sparingly soluble in water; chars above 300°C. without melting. Suggested uses: Chemical intermediate; coupling agent; dye intermediate. Availability: pilot-plant quantities. Chas. Pfizer and Co., Inc.

**COENZYME A CONCENTRATES**

A partially purified coenzyme isolated from animal tissues. Purity: 2 to 10 per cent. Also contains other adenine nucleotides; essentially free of pantothenic acid. Suggested uses: In biochemical research, to study biological function of many types of acylation and related reactions. Availability: research quantities; larger amounts on special order. Krishell Laboratories, Inc.

**N-(2-CYANOETHYL)-2-METHYL-5-ETHYL PIPERIDINE**

M.W., 200.176; Sp.G., 0.921 at 20/20°C.; B.P., 100°C. at 3 mm. Hg.; colorless liquid. Chemical properties: Undergoes reactions typical of tertiary amines and nitriles. Suggested uses: Intermediate for the preparation of pharmaceuticals, agricultural chemicals, resins. Availability: research quantities for experimental use. Carbide and Carbon Chemicals, a Div. of Union Carbide and Carbon Corp.

**CYCLOHEXYL METHACRYLATE**

C<sub>10</sub>H<sub>18</sub>O<sub>2</sub>. M.W., 168.23; B.P., 210°C.; R.I. @ 20°C., 1.4578; Sp.G. 0.9626; colorless monomeric liquid with pleasant odor; can be polymerized to clear polymers of superior optical and physical properties. Shrinkage upon polymerization is 12.55%, one-half that of conventional methacrylate resins. Suggested uses: In optical lens systems; potting resins for electronic assemblies; protective coatings. Availability: commercial quantities. American Monomer Corp.

**DEOXYGENASE**

An enzyme preparation containing glucose oxidase and catalase; buffered, stabilized solution; oxidizes glucose to gluconic acid. Suggested uses: Suitable for the removal of glucose, e.g., in the manufacture of dried egg products and for the removal of oxygen (residual air) from bottled, canned or packaged food products. Commercially available. Takamine Laboratory, Inc.

**DIALLYL MALEATE**

C<sub>8</sub>H<sub>10</sub>O<sub>2</sub>. M.W. 196.2; B.P. @ 3 mm., 109-110°C.; Sp.G. 1.077; R.I. 1.4699; pale straw colored liquid; reactive monomer, normally uninhibited. Typical reactions: Polymerization; can be reacted across double bonds with numerous adducts, such as alcohols, amines, inorganic acids, nitroparaffins, thiocompounds, nitriles, acetoacetic ester, conjugated dienes and malonic esters. Suggested uses: For preparation of polymers and copolymers. Comonomers may be all types of ethylenic compounds and drying oils. Vinyl acetate and styrene have been used as comonomers with interesting results. Available in commercial quantities. American Monomer Corp.

**N,N-DIALLYLMELAMINE**

(CH<sub>2</sub>=CHCH<sub>2</sub>)<sub>2</sub>N<sub>2</sub>C<sub>6</sub>H<sub>3</sub>(NH<sub>2</sub>)<sub>2</sub>. M.W., 206.25; white crystalline solid; M.P., 142°C.; density, 1.242 at 30°C.; soluble in acetone, butyl cellosolve, dioxane, ethanol, ethyl acetate, methyl

alcohol; insoluble in benzene, heptane, water. Chemical properties: Forms salts with mineral acids and condensation polymers with formaldehyde. Polymerizes by itself and copolymerizes with other ethylenic monomers. Suggested uses: The formaldehyde condensates are useful for molding compositions, surface coatings and paper finishes. The ethylenic copolymers should find similar applications. Availability: trial-lot quantities. American Cyanamid Co.

**1,4-DIAMINODIHYDROANTHRACINONE**

C<sub>14</sub>H<sub>8</sub>(OH)<sub>2</sub>(NH<sub>2</sub>)<sub>2</sub>. M.W., 240.26. Greenish brown crystals, melting 240-250°C. (dec.). Suggested uses: Raw material for violet dyes for acetate rayon; for violet and green smoke colors for military signals; and for making red and brown vat dyestuffs. Availability: commercial quantities. The Carwin Company.

**DIAMYL MALEATE**

C<sub>18</sub>H<sub>30</sub>OC<sub>2</sub>CH<sub>2</sub>CH<sub>2</sub>COOC<sub>2</sub>H<sub>5</sub>. M.W., 256.3; Sp.G., 0.975 at 20/20°C.; B.P., 144°C. at 1 mm. Hg. Chemical properties: Reacts to add halogens, hydrogen halides, alcohols, hydrogen cyanide, sodium bisulfite, and acids across the double bond; polymerizes and copolymerizes with other ethylenic monomers. Suggested uses: Preparation of polymers and copolymers for use in molded products and coatings for textiles, metal, and leather; chemical intermediate. Availability: research quantities. Carbide and Carbon Chemicals Co., Div. of Union Carbide and Carbon Corp.

**N,N'-DIBENZYLETHYLENEDIAMINE DIACETATE**

(C<sub>6</sub>H<sub>5</sub>CH<sub>2</sub>NHCH<sub>2</sub>)<sub>2</sub>·2CH<sub>3</sub>COOH. M.W., 360.44; M.P., 115°C. min.; purity, 98% min.; color, white to buff. Chemical properties: Free base reacts with aldehydes to yield 2-substituted 1,3-dibenzylethylhydrazinylacetaldehyde with monobasic acid chlorides to give N,N'-diacyl derivatives, and with isocyanates to form 1,2-bis(1-benzyl-3'-alkylureido) ethanes. Suggested uses: In the synthesis of pharmaceuticals and other organic chemicals. Availability: commercial quantities. Benzol Products Co.

**DICHLOROACETALDEHYDE**

ClCH<sub>2</sub>CHO. M.W., 112.95; B.P., 88°C.; F.P., 50°C.; Sp.G. 25/4, 1.436; R.I. 25C., 1.4533; Density, 12.02/gal.; Viscosity, 25C., 1.32cp.; Flash P. (open), 59°C.; assay 90%. DCA; colorless liquid. Chemical properties: DCA slowly and reversibly polymerizes to a white solid. Presence of the two chlorine atoms enhances the reactivity of the aldehyde as well as imparting a bifunctional characteristic to the molecule. Suggested uses: Intermediate for the preparation of pharmaceuticals, plasticizers and stabilizers of cellulose materials, insecticides, textile dyes, perfume additives. Availability: development quantities. Westvaco Chemical Division.

**DICHLOROACETIC ACID**

Cl<sub>2</sub>CHCOOH. M.W., 128.95; purity, 98% min.; Sp.G., 1.363 @ 20/4C.; B.P., 194.4C.; M.P., 9.7C. (to 4C.); R.I., 1.465 @ 22C./D; miscible with water, alcohol, ether. Chemical properties: Strong organic acid. Suggested uses: Intermediate for organic chemicals, pharmaceuticals and dyes. Availability: semi-commercial quantities. Kay-Fries Chemicals, Inc.

**1,2-DICHLOROBUTENE-3**

M.W., 124.962; Boiling Range, 43-47°C. at 40 mm. Hg.; Sp.G., 1.158 at 20/20°C.; R.I. at 20°C., 1.4660; colorless liquid. Chemical properties: Undergoes reactions typical of chlorinated hydrocarbons and compounds containing the double bond. Suggested uses: Cross-linking agent and intermediate for the preparation of resins and plasticizers and solvent for oils, fats and many other organic materials. Availability: research quantities for experimental use. Carbide and Carbon Chemicals Co., Div. of Union Carbide and Carbon Corp.

**1,4-DICHLOROBUTENE-2**

M.W., 124.962; Boiling Range, 72-75°C. at 40 mm. Hg.; Sp.G., 1.197 at 20/20°C.; R.I. at 20°C., 1.4887; colorless liquid. Chemical properties: Undergoes reactions typical of chlorinated hydrocarbons and compounds containing the double bond. Suggested uses: Cross-linking agent and intermediate for the preparation of resins and plasticizers and solvent for oils, fats and many other organic materials. Availability: research quantities for experimental use. Carbide and Carbon Chemicals Co., a Div. of Union Carbide and Carbon Corp.

**2,4-DICHLOROPHENOXYACETIC ACID, RADIOACTIVE, C-14**

$\text{C}_6\text{H}_3\text{Cl}_2\text{O}_2$  CH<sub>2</sub>COOH. M.P., 138-140°C. Specific activity: 10 millicuries per millimole. In order to produce this radioactive compound, authorization from the U. S. Atomic Energy Commission must be obtained. Suggested uses: Research in plant metabolism of 2, 4-D, applications research on 2, 4-D formulations. Availability: in millicurie quantities. Tracerlab, Inc.

**3-DIETHYLAMINOPROPYLAMINE**

$(\text{C}_2\text{H}_5)_3\text{N}(\text{CH}_2)_3\text{NH}_2$ . M.W., 113.91; B.P., 55°C. (10mm.), 88°C. (50mm.), 122°C. (200mm.), 159°C. (760mm.). F.P., 29°C. Flash point. (Tagliabue closed cup), 63.8°C. R.I. @ 25°C, 1.4418; density, 0.8283 g./cc. at 20°C.; miscible with acetone, ethanol, hexane, methanol, water. Chemical properties: Typical reaction of a primary amine. Suggested uses: Synthetic intermediate; curing agent for epoxy resins. Availability: trial-lot quantities. American Cyanamid Co.

**DIETHYL ETHOXYMETHYLENEMALONATE**

$\text{CH}_3\text{OCHCH}(\text{COOCH}_2\text{CH}_3)_2$ . M.W., 217; purity, 98% min.; density, 1.0835 @ 15°C.; R.I., 1.4625 @ 20°C./D; B.P., 279.281°C. with decomposition; insoluble in water. Chemical properties: Source for the ethoxymethylene group in synthesis. Suggested uses: Intermediate for organic chemicals and pharmaceuticals, including antimalarials. Availability: commercial quantities. Kay-Fries Chemicals, Inc.

**DIISOBUTYLENE OXIDE**

$(\text{CH}_3)_2\text{CHCH}_2\text{OCH}(\text{CH}_3)_2$ . M.W., 128.21; Sp.G., 0.824 at 15/15°C.; B.P., 132-142°C. at 760 mm. Hg., 49-56°C. at 50 mm. Hg. Chemical properties: May be hydrogenated to a C-8 alcohol and isomerized to a C-8 aldehyde. Reacts with compounds containing an active hydrogen atom to add the hydroxy alkyl group. Suggested uses: Intermediate in the preparation of surface-active agents, synthetic resins, lubricating oil additives, solvents, lubricants, rubber chemicals, pharmaceuticals, and ion exchange resins. Availability: research quantities. Carbide and Carbon Chemicals Co., Div. of Union Carbide and Carbon Corp.

**N,N-DIISOPROPYL ETHANOLAMINE**

$(\text{C}_2\text{H}_5)_2\text{NCH}_2\text{CH}_2\text{OH}$ . M.W., 145.160; Sp.G., 0.8742 at 20/20°C.; Boiling Range, 185.5-191.7°C. at 760 mm. Hg.; colorless liquid. Chemical properties: Undergoes reactions characteristic of tertiary amines and primary alcohols. Suggested uses: Intermediate for the preparation of pharmaceuticals, dyestuffs, emulsifiers, textile-finishing agents and resins. Availability: Commercial quantities. Carbide and Carbon Chemicals Co., Div. of Union Carbide and Carbon Corp.

**DIMETHYL ACETAMIDE**

$\text{C}_4\text{H}_{11}\text{NO}$ . M.W., 87.12; Sp.G. @ 25°C, 0.9366; R.I. @ 25°C., 1.4351; R.P., 165°C. Color type molecule; colorless liquid; miscible with water, aromatics, esters, ketones, and ethers. Suggested uses: Solvent applications for plastics, resins, and gums. Dissolves more difficultly soluble polymers such as polyacrylonitrile and its copolymers; readily dissolves vinyls, acrylates, cellulose derivatives, styrenes, and linear type polyesters. Available in commercial quantities. Monomer-Polymer, Inc.

**DIMETHYLAMMONIUM DIMETHYLCARBAMATE (DMC)**

$(\text{CH}_3)_2\text{N}(\text{CO}_2\text{NH}_2)(\text{CH}_3)_2$ . M.W., 134.17; Sp. G., 1.026 at 25°C.; R.I., 1.4212 @ 25°C.; A.S. solution Visc., 45.3 cps. at 25°C.; B.P., 60.2°C. (760 mm.); pH of aqueous solution, 9.4. Completely miscible with water and many alcohols, ketones, esters, benzene and other aromatics, some olefins and solvents, and is partially miscible with paraffins; color, water white. Chemical properties: In general, reacts as though it were a solution of dimethyl amine and as such may provide a convenient source, or reservoir, of dimethyl amine; with acidic substances, alkyl halides, isocyanates, carbon disulfide, etc., the carbamate reacts with the evolution of carbon dioxide to form products that result from reaction of dimethyl amine and the respective reactants. Suggested uses: As a selective solvent for refining operations; a convenient source of anhydrous dimethyl amine. Availability: research and development quantities. E. I. du Pont de Nemours & Co., Inc.

**N,N'-DI-( $\alpha$ -METHYLBENZYL) ETHYLENE DIAMINE**

$\text{C}_6\text{H}_5\text{CH}(\text{CH}_3)\text{NHC}_2\text{H}_4\text{NHC}(\text{CH}_3)\text{C}_6\text{H}_5$ . Pale yellow, mobile liquid soluble in most or-

ganic solvents; limited solubility in water. M.W., 268.39; B.P., 140°C. at 1 mm. Hg.; Sp.G., 0.996 at 20/20°C.; R.I. at 30°C., 1.5450. Chemical properties: Undergoes typical reactions of aliphatic secondary diamines. The two phenyl groups add special properties such as oil solubility and high boiling point. Suggested uses: Intermediate in preparation of amine salts and other addition products with limited water solubility; preparation of rubber chemicals, gas-fading inhibitors and other textile specialties. Availability: research quantities for experimental use. Carbide and Carbon Chemicals Co., a Div. of Union Carbide and Carbon Corp.

**3,5-DIMETHYL HEXENOLIDE**

$(\text{CH}_3)_2\text{COCOC}(\text{CH}_3)_2\text{CH}_2$ . M.W., 140.18; Sp.G., 1.0101 at 20/20°C.; B.P., 158°C. at 100 mm. Hg.; V.P., 0.04 mm. Hg. at 20°C.; Fr. P., -13.5°C.; Viscosity, 3.9 cps. at 20°C.; R.I. at 20°C., 1.4638; surface tension, 25.9 dynes/cm. at 25°C.; Sol. in water, 0.63% by wt. at 20°C.; sol. water in, 4.0% by wt. at 20°C.; soluble in most organic solvents. Chemical properties: Reactive lactone. Can be converted to esters. Preparation of esters of polyhydroxyl materials, upgrading of drying oils, and modification of alkyl resins. Availability: research quantities. Carbide and Carbon Chemicals Co., Div. of Union Carbide and Carbon Corp.

**N,N-DIMETHYLHYDROXY ACETAMIDE (DMHA)**

$\text{HOCH}_2\text{CON}(\text{CH}_3)_2$ . M.W. 103.12; density, 1.092 at 25/4°C.; R.I., 1.4510 at 50°C.; F.P., 45°C.; B.P. ca. 218°C. (decomp.). Very soluble in water, methanol, ethanol, ether, dioxane, acetone, chloroform and benzene; practically insoluble in petroleum ether, and kerosene. Chemical properties: DMHA undergoes the reaction of a primary alcohol and can be esterified in the usual manner. Suggested uses: As a selective solvent in the separation of organic mixtures and as an intermediate in organic synthesis. Availability: experimental and development quantities. E. I. du Pont de Nemours & Company, Inc.

**ETHYLENE GLYCOL DIMETHACRYLATE**

$\text{C}_6\text{H}_{10}\text{O}_4$  Mol. Wt. 198.2; B.P. 122-126°C @ 15 mm; R.I. 1.4558; colorless liquid; reactive monomer inhibited with 0.06% hydroquinone. Suggested uses: As a cross-linking agent for increasing the hardness, toughness, and impact resistance of resin compositions, such as vinyl plastisols, vinyl organosols, polyesters, methacrylates, butyral, and others; as a comonomer for uses with other monomers in producing polymers with improved temperature and chemical resistance. Available in commercial quantities. American Monomer Corp.

**5-ETHYL-2-METHYL PIPERIDINE**

Pale yellow liquid soluble in most organic solvents. M.W. 127.23; B.P., 97°C. at 100 mm. Hg.; 116°C. at 200 mm. Hg.; Sp.G., 0.840 at 20/20°C.; R.I. at 30°C., 1.4493. Chemical properties: Undergoes typical reactions of saturated heterocyclic amines; strongly basic; forms salts easily. Suggested uses: Intermediate in the preparation of rubber chemicals, corrosion inhibitors, flotation reagents, oxidation inhibitors, and amine salts. Availability: search quantities. Carbide and Carbon Chemicals Co., Div. of Union Carbide and Carbon Corp.

**p-ETHYLNITROBENZENE**

$\text{C}_6\text{H}_4\text{CH}_3\text{NO}_2$ . M.W., 151.1. Yellow to brown clear mobile liquid; assay, 99-100% (including approx. 4% ortho isomer and 1% dinitroethylbenzene). Approx. B.P. 245-246°C.; Crystallizing point, 11.3-14.5°C.; Flash point (Cleveland Open Cup), 280°C.; Fire Point (Cleveland Open Cup), 280°C.; typical nitro-aromatic odor. R.I. at 25°C., 1.54. Miscible in most organic solvents, immiscible in water. Sp.G. at 25/25°C., 1.13. Weight per U.S. gallon, 9.87 lb. at 70°F. Suggested uses: Chemical intermediate in dyestuff, pharmaceutical, and other fields. Monsanto Chemical Co.

**FORMIC ACID, ANHYDROUS**

$\text{HCOOH}$ . M.W. 46. A clear, water white, volatile, hygroscopic liquid. F.P. 8.4°C.; B.P. 100.75°C. at 760 mm. pressure; Density 20/4 1.2196; R.I. at 20°C., 1.3714. Suggested uses: Special purpose solvent, catalyst in organic synthesis. Availability: research samples and experimental lots by arrangement. (Caution: Harmful to skin and other tissues.) Victor Chemical Works.

**2-FORMYL-3, 4-DIHYDRO-2H-PYRAN**

$\text{CH}_2\text{CHCHOCH}(\text{CHO})\text{CH}_2$ . M.W., 112.12; Sp.G., 1.0776 at 20/20°C.; B.P., 150.6°C. at 760 mm. Hg.; V.P., 2.8 mm. Hg. at 20°C.; F.P., sets to a glass below -90°C.; Viscosity, 2.2 cps. at 20°C.; R.I. at 20°C., 1.4645; sol. in water, complete at 20°C.; soluble in most organic solvents. Chemical properties: Hydrolyzes to form alpha-hydroxy aldehyde; aldehyde group reacts with amines, alcohols, phenols, etc., undergoes addition reactions on double bond when aldehyde group is protected. Uses: Chemical intermediate. Availability: pilot-plant quantities. Carbide and Carbon Chemicals Co., Div. of Union Carbide and Carbon Corp.

**GERMINE**

$\text{C}_8\text{H}_{15}\text{O}_3\text{N}$ . M.W., 510; M.P., 222°C. (dec.). An alkali; white crystalline solid. Obtainable from Veratrum viride, Veratrum Album, Veratrum escholtzii. Occurs in nature as hypotensive esters such as germinine and neogerminine. Availability: research quantities. Riker Laboratories, Inc.

**GLUCOSE-1-PHOSPHATE**

M.W. 260. A natural product, isolated from plant tissues. Chemical properties: Produces starch in near-quantitative yield in presence of the enzyme phosphorylase; phosphate group easily hydrolyzed. Suggested uses: In biochemical research, in the formation of starch, glycogen or sucrose. Availability: large laboratory or pilot-plant scale. Krishell Laboratories, Inc.

**GLUCURONOLACTONE**

$\text{C}_6\text{H}_{10}\text{O}_7$ . M.W., 176; Sp.G., 1.76 @ 30/4°C.; M.P., 172°C.; initial pH of 10% aq. soln. 3.5; white crystalline powder. The gamma lactone of glucuronic acid which is present in essentially all fibrous and connective tissues in animals and humans. Conjugates with many toxic (glucuronogenic) materials and is of interest as a general detoxicant, hyaluronidase inhibitor, solubilizing agent. Commercially available. Chemical Div., Corn Products Sales Co.

**GLYCOLONITRILE**

$\text{HOCH}_2\text{CN}$ . M.W. 57; purity: 70% aqueous solution; Sp.Gr. at 25°C.; 1.085; R.I. at 25°C., 1.3904. Freezing point, -35°C. pH (glass electrode), 2.3-3.0. Chemical properties: Both the hydroxyl group and the cyano group are reactive, giving typical derivatives via these functional groups; convenient agent for cyanomethylation. Suggested uses: Solvent for polyacrylonitrile, chemical intermediate in the preparation of compounds useful as gas absorbents, sequestering agents, pharmaceuticals, insecticides, etc. Availability: commercial quantities. Rohm and Haas Co.

**HEXAMETHYLPHOSPHORAMIDE**

$[(\text{CH}_3)_2\text{N}]_2\text{PO}$ . M.W., 179.2; colorless, clear, mobile liquid. B.P., 66°C. at 0.5 mm. and 98-100°C. at 6.0 mm.; Crystallization point, approx. 4°C.; n<sub>D</sub><sup>20</sup> 1.4570; Sp.Gr., 1.024 at 25/25°C.; Viscosity, 1.13 cps. at 25°C.; Flash point, 25°C. Soluble in benzene, heptane, carbon disulfide, carbon tetrachloride, ethanol, methanol, acetone, ether, water, ethyl acetate. Suggested uses: industrial solvent. Availability: laboratory quantities; pilot-plant quantities may be arranged. Monsanto Chemical Co.

**2-HYDROXY-3-NAPHTHOIC ACID HYDRAZIDE**

$\text{C}_{10}\text{H}_7\text{O}_3\text{N}_2$ . M.W., 202.21; M.P., 203-204°C.; pale yellow crystalline solid soluble in organic solvents and slightly soluble in H<sub>2</sub>O. Suggested uses: For detection of carbonyl groups in ketosteroids and chromatographic separation of ketosteroids. Availability: reagent and pilot plant quantities. Dajac Laboratories Div. of Monomer-Polymer, Inc.

**ISONITROTIC ACID HYDRAZIDE**

$\text{C}_3\text{H}_5\text{N}_2\text{O}_3$ . M.W., 137.0; M.P., 169-172°C.; soluble in water, 15 gm/100 ml at 25°C.; white crystalline powder. Suggested uses: Treatment of tuberculosis which is resistant to streptomycin. Commercially available. Chas. Pfizer and Co., Inc.

**ISOPROPYL N-3-CHLOROPHENYL CARBAMATE**

$\text{m-ClC}_6\text{H}_4\text{NHCOC}(\text{CH}_3)_2$ . M.W., 213.66; Sp.Gr., 1.18 @ 30°C.; M.P., 41.4°C.; R.I. 1.5395 @ 20°C.; B.P. 247°C. (decomp.). V.P. 149°C., 2 mm.; 161°C., 5 mm.; 177°C., 15 mm.; very slightly sol. in water; light tan color. Hydrolyzes in acids forming m-chloroaniline. CO<sub>2</sub> etc. Suggested for trial use as a selective herbicide.





as per specifications.

UNITED STATES TESTING COMPANY, INC.

TEST NUMBER  
4278

ADDRESS: P. O.  
WASHINGTON, D. C.  
WASHINGTON, D. C. 20004

REPORT OF TEST

July 18, 1952.

TEST MADE FOR  
American Alkali Industries  
Carlsbad  
New Jersey

Material used  
SODIUM LAYO E Lot #49  
Type - Pure Sodium Alkyls  
viscosity 37,000 cP.

Purpose of Test:

To check conformance of the results to specifications published by subject company.



	Spinel	Spinel
7. Gusep . . . . .		
8. <i>estigea</i> per gallon (TV-P-144b) <i>Medusa</i> 10.11	\$2.0 lbs./gal.	\$1.15 - \$2.25
9. "Insecty at GSE Solids . . . . .	8 Hines	Q - Y
10. Mineral Spinel Tolerance . . . . .	200 lbs./100 lbs. Resin	200 lbs./100 lbs. resin
<b>Chemical Tests:</b>		
11. Resin (Esterwax-sterch) . . . . .	None	None
12. Phenite (TV-P-144b Medusa 10.11)	None	None

# Aureomycin

and efficient

## SOLVENT RECOVERY

by Vulcan



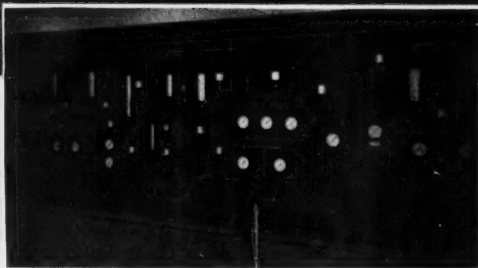
Lederle

In the big new aureomycin plant of Lederle Laboratories Division of the American Cyanamid Company at Pearl River, N. Y., solvent recovery is vital. Solvents must be recovered for reuse in better than 99% purity if the process is to be economically feasible.

Vulcan in cooperation with Lederle designed a complete unit for recovery of the many solvents used. Vulcan also supplied all equipment and materials and supervised construction.

Five separate feed streams are handled in four distillation trains consisting of seven towers. Operating control of the unit is entirely automatic and is regulated from a graphic panel in the control house. Complete flexibility accommodates wide variations in flow rates and compositions of the various feed streams. Process alterations are thus possible without major changes in the solvent recovery unit.

The result? Less cost, less time lost in turning out the product.



# VULCAN

CINCINNATI

The VULCAN COPPER & SUPPLY CO.,

General Offices and Plant, CINCINNATI 3, OHIO

NEW YORK BOSTON PHILADELPHIA SAN FRANCISCO  
VICKERS VULCAN PROCESS ENGINEERING CO., LTD., MONTREAL, CANADA

DIVISIONS OF THE VULCAN COPPER & SUPPLY CO.:

VULCAN ENGINEERING DIVISION

VULCAN MANUFACTURING DIVISION

VULCAN CONSTRUCTION DIVISION

VULCAN INDUSTRIAL SUPPLY DIVISION

## CW Report

Availability: commercial quantities. Columbia Southern Chemical Corp.

### ISORUBIJERVINE

$C_{27}H_{40}O_2N$ . M.W., 410; M.P., 218°C. (needles). An alkaloid. White crystalline solid. Obtainable from *Veratrum viride* and *Veratrum Album*. Availability: pilot-plant quantities. Riker Laboratories, Inc.

### JERVINE

$C_{27}H_{40}O_2N$ . M.W., 426; M.P., 247°C. An alkaloid; white crystalline solid. Obtainable from *Veratrum viride* and *Veratrum Album*. Has characteristic absorption peaks under ultraviolet light at 250 and 360 mμ. Availability: pilot-plant quantities. Riker Laboratories, Inc.

### LITHIUM CHROMATE

$Li_2CrO_4 \cdot 2H_2O$ . M.W., 165.92; solubility in water, 49.94% at 30°C. Transition to anhydrous  $Li_2CrO_4$  at 74.6°C.; solubility of anhydrous salt in commercially pure methanol, 13.4% at 0°C., and 15.7% at 25°C.; bright yellow crystals. Chemical properties similar to other chromates. Suggested uses: Similar to other soluble chromates, in systems where sodium, potassium or ammonium salts may not be used; corrosion inhibitor in amines and amines; corrosion inhibitor in lithium chloride brines used for dehumidification in air conditioning. Availability: pilot-plant quantities, 99.5%  $Li_2CrO_4 \cdot 2H_2O$  minimum. Mutual Chemical Co. of America.

### LYSOZYME

A basic protein or polypeptide. M.W. about 15,000. Relatively rich in arginine and lysine, free of phosphorus. Suggested uses: Biochemical research for the hydrolysis of certain carbohydrates. Availability: research quantities, larger amounts on special order. Krissell Laboratories, Inc.

### MPL MONOMER

A clear, colorless, monomeric liquid with a boiling point greater than 200°C. @ 1 mm.; Sp.G., 1.075; R.I. @ 20°C., 1.4620; Viscosity 12 cp.; insoluble in water, limited solubility in aliphatic hydrocarbons, and soluble in styrene, methyl methacrylate, diallyl malate, polyesters, allyl esters, vinyl acetate, acrylic acid, acrylonitrile, and aromatics. Suggested uses: As a cross-linking agent for use with monomers and resin compositions in producing resins which exhibit improved chemical and temperature resistance, improved strength, toughness, hardness, and impact resistance. MPL is particularly suggested for use with vinyls, such as plastisols and organosols. Available in commercial quantities. American Monomer Corp.

### MANGANESE DIOXIDE, SYNTHETIC, ELECTROLYTIC

$MnO_2$ . Uniform black powder. Apparent density, 17.25 g./cu. in.; crystal morphology, gamma phase. Available oxygen as %  $MnO_2$ , 85% min.; total manganese as %  $Mn$ , 58.0% min.; absorbed moisture as %  $H_2O$ , 3.0% max.; iron as %  $Fe$  (soluble HCl), 0.3% max.; silicon as %  $SiO_2$ , 0.5% max.; total alkali and alkaline earth metals, 1.0% max.; total heavy metals (other than  $Fe$ ,  $Pb$ ), 0.3% max.; lead as %  $Pb$ , 0.2% max. Suggested uses: In the manufacture of dry cell batteries, as an oxidizing agent, as a glass decolorizer, and as a catalyst in vapor phase oxidations. Commercially available. Western Electrochemical Co.

### METHACRYLIC ACID, GLACIAL

$CH_2=C(CH_3)COOH$ . M.W., 86; purity 99%; Sp.G., 1.014. Water content 0.1%. M.P., 14-16°C.; B.P., 149-151°C./760 mm. Chemical properties: Readily copolymerizes with butadiene, styrene, and other monomers in non-aqueous systems (commercially-available 90% methacrylic acid in aqueous systems). Undergoes Diels-Alder reaction with dienes; addition reactions at double bond with amines, mercaptans, alcohols, halogen acids. Can be esterified with alcohols to give methacrylic esters. Availability: pilot-plant quantities. Rohm and Haas Co.

### METHIONINE ANALOGUE

$(CH_3SCH_2CH_2CHOHCOO)Ca$ . Calcium salt of D,L-alpha-hydroxy-gamma-methyl mercaptobutyric acid. M.W., 338.14; free flowing light tan powder. Soluble in water, insoluble in common organic solvents. Suggested uses: Feed additive for poultry and swine feeds; pharmaceutical; and as an intermediate in pharmaceutical synthesis. Availability: commercial quantities. Monsanto Chemical Co.

### α-METHYLBENZYL AMINE

Water-white liquid, mildammoniacal odor. M.W.,

121.18; Sp.G., 0.9535 at 20/20°C.; R.I. at 20°C., 1.5366; B.P., 188.5°C. at 760 mm.; V.P., 0.5 mm. Hg. at 20°C.; F.P., sets to a glass below -65°C.; sol. in water, 4.8% by wt. at 20°C.; sol. of water in, 48.0% by wt. at 20°C.; Flash Point, 175°F. (Cleveland open cup); soluble in most organic solvents and hydrocarbons. Chemical properties: Undergoes typical reactions of aliphatic primary amines; usual reactions on the benzene ring are possible when the amine group is protected by acetylation. Suggested uses: Preparation of amine salts and amides; as emulsifying agent; preparation of gas-fade "resists" and textile specialties. Availability: commercial quantities. Carbide and Carbon Chemicals Co., Div. of Union Carbide and Carbon Corp.

### α-METHYLBENZYL CELLOSOLVE\*

Water-white, mobile liquid with mild pleasant odor. Alpha-Methylbenzyl Cellosolve is an aryl substituted alkyl glycol-ether and exhibits an extremely low solubility in water and a relatively high solvency for water. This property suggests its use as a coupling agent for water in certain water-immiscible systems. It is also suggested for trial as a high-boiling solvent for inks, metal coatings, adhesives, and for use as an intermediate in the synthesis of perfume fixatives, plasticizers, germicides, and pharmaceuticals. Availability: research quantities. Carbide and Carbon Chemicals Co., Div. of Union Carbide and Carbon Corp.

### α-METHYLBENZYL DIETHANOLAMINE

Pale yellow liquid, mild ammoniacal odor. M.W., 209.28; Sp.G., 1.0812 at 20/20°C.; R.I. at 20°C., 1.5392; B.P., 244°C. at 50 mm.; V.P., less than 0.01 mm. Hg. at 20°C.; F.P., sets to a glass below -7°C.; sol. in water, 5.3% by wt. at 20°C.; sol. of water in, 28.0% by wt. at 20°C.; Flash point, 370°F. (Cleveland open cup); soluble in most organic solvents. Chemical properties: Undergoes reactions typical of aliphatic tertiary amines; usual reactions on the benzene ring are possible when the hydroxyl groups are protected by acetylation; forms quaternary bases by reaction with alkyl halides. Suggested uses: Preparation of amine salts; as emulsifying agent; preparation of quaternary ammonium salts for detergents and germicides. Availability: commercial quantities. Carbide and Carbon Chemicals Co., Div. of Union Carbide and Carbon Corp.

### α-METHYLBENZYL ETHER

Water-white, mobile liquid with faint odor. M.W., 226.30; Sp.G., 1.0017 at 20/20°C.; B.P., 286.3°C. at 760 mm.; V.P., <0.01 mm. Hg. at 20°C.; F.P., sets to a glass below -30°C.; sol. in water, less than 0.01% by wt. at 20°C.; sol. of water in, 0.1% by wt. at 20°C.; Flash point, 275°F. (Cleveland open cup); soluble in most organic solvents. Chemical properties: Dehydrates readily to styrene; hydrolyzes under acid conditions to phenyl methyl carbinol; other reactions typical of secondary aliphatic ether; most reactions on benzene ring result in poor yields because of tendency to dehydrate to styrene and polymerize. Suggested uses: High boiling inert solvent (except under dehydrating conditions); high boiling styrenating agent for alkyl and oleo-resinous varnish constituents, softener for synthetic rubbers. Availability: commercial quantities. Carbide and Carbon Chemicals Co., Div. of Union Carbide and Carbon Corp.

### N-METHYL-N,N-BIS(3-AMINOPROPYL)

#### AMINE

M.W., 145.176; B.P., 85°C. at 2.5 mm. Hg.; R.I. at 30°C., 1.4700; colorless liquid. Chemical properties: Undergoes reactions typical of primary and tertiary amines. Suggested uses: Intermediate for the preparation of resins, rubber chemicals, and oil additives. Availability: research quantities for experimental use. Carbide and Carbon Chemicals Co., Div. of Union Carbide and Carbon Corp.

### N-METHYL-N,N-BIS(2-CYANOETHYL)

#### AMINE

$CNCH_2N(CH_3)CH_2CN$ . M.W., 137.112; B.P., 151°C. at 3.5 mm. Hg.; Sp.G., 0.978 at 30°C.; R.I. at 30°C., 1.4582; colorless liquid. Chemical properties: Undergoes reactions typical of nitriles and tertiary amines. Suggested uses: Intermediate for the preparation of pharmaceuticals, resins and plasticizers. Availability: research quantities for experimental use. Carbide and Carbon Chemicals Co., Div. of Union Carbide and Carbon Corp.

\* Trade mark

### N,N'-METHYLENEDISACRYLAMIDE

$(CH_2=CHCONH)CH_2NH$ . M.W., 154.17; white crystalline solid; M.P., 185°C. (dec.); density, 1.235 at 30°C.; soluble in water, butyl cellosolve, ethanol, methyl alcohol; slightly soluble in acetone, chloroform, dioxane, ethyl acetate; insoluble in benzene, heptane. Chemical properties: Reactions typical of the activated double bond; polymerizes by itself and forms copolymers with other ethylenic monomers. Suggested uses: cross-linking agent for use with ethylenic monomers for the preparation of ion-exchange resins, molding compounds, surface coatings, and textile and paper finishes. Availability: trial-lot quantities. American Cyanamid Co.

### METHYL GLUCOSIDE

$(C_6H_{12}O_6)$ . M.W., 194; M.P., 165 ± tcc.; Sp.G., 1.46 @ 30/4°C.; solubility, 63 g./100 g. water; white crystalline powder, synthetic polyol for use in esterification and alcoholysis reactions. A stable, non-hygroscopic, crystalline compound, it offers four esterifiable hydroxyl groups for the preparation of synthetic drying oils and varnishes, resins, plasticizers, and surface active agents. Availability: pilot-plant scale. Chemical Div., Corn Products Sales Co.

### N-METHYL ISOPROPYLAMINE

$CH_3NHCH(CH_3)_2$ . M.W., 73.14; B.P., 51-53°C. A dialkylamine with moderate steric hindrance, potentially available at a low price. Availability: experimental quantities. Sapon Laboratories, Inc.

### 2-METHYL-2-PENTENOL-1

$CH_3CH_2CH(CH_3)CH_2CH_2OH$ . M.W., 100.16; B.P., 84°C. at 50 mm. Hg.; density, 0.854 at 20/15.6°C.; R.I. at 30°C., 1.4418. Chemical properties: Undergoes typical reactions of a primary alcohol and the usual addition reactions to the double bond. Suggested uses: Intermediate in the preparation of pharmaceuticals, preparation of esters for copolymerization. Availability: research quantities. Carbide and Carbon Chemicals Co., Div. of Union Carbide and Carbon Corp.

### α-NAPHTHYL ISOCYANATE

M.W., 169; amine equivalent, 169 (grams of isocyanate per gram mole of secondary amine); B.P., 115-117°C. (3 mm.), 270°C. (760 mm.); specific gravity at 25°C., 1.18. A liquid organic isocyanate. Reacts with compounds containing an active hydrogen atom; decomposes slowly in water or on exposure to atmosphere; soluble in toluene, also dichlorobenzene and xylene. Suggested uses: For identification of alcohols and amines and as a dye intermediate. Availability: semi-commercial quantities. Monsanto Chemical Co.

### NEOPROTEROCTERINE

$C_{16}H_{25}O_4N$ . M.W., 810; M.P., 225°C. An alkaloid. White crystalline solid, strongly sternutatory obtainable from *Veratrum viride*. It is a tetraester of the alkaline proterovine,  $CaH_8O_4N$ . Hypotensive activity is 0.38/kg/min. for 10 minutes by Stutzman-Maison method of assay. Availability: research quantities. Riker Laboratories, Inc.

### OCTAMETHYLPYROPHOSPHORAMIDE

$[(CH_3)_3N]_4P_2O_6P_2O_6[(CH_3)_3N]$ . Assay 70%; yellow to brown liquid; Sp.G. at 25/25°C., 1.109; soluble in water, ethanol, acetone, chloroform, benzene, ethyl acetate, ethyl ether, and xylene; insoluble in heptane. Stable with 0.1N NaOH for 24 hours, decomposed by dilute HCl. Suggested uses: Translocating or systemic, insecticide for greenhouse or agricultural use. Availability: semi-commercial quantities. Monsanto Chemical Co.

### OCTYL DIHYDROGEN PHOSPHATE 80%

$CH_3(CH_2)_7O(H)_2$ . Concentration 80% to 90%; M.W., 210. A light amber liquid which freezes below 0°C. undistillable; stable at temperatures well above 100°C. A dibasic acid very slightly soluble in water, but miscible in all proportions with common organic solvents. Density 1.08. Suggested uses: Water insoluble modification of phosphoric acid; solvent; polymerization catalyst for resins; intermediate for surface active materials, lubricant additives, and corrosion inhibitors. Availability: Research quantities. Victor Chemical Works.

### OLEIC ACID, VEGETABLE

Emersol 240 Elaine. An oleic acid of all vegetable source. Possesses excellent oxidation stability and bland odor; iodine value, 84-90; Acid Value, 191-25; Saponification value, 192-196; titer, 15-20°C.; Color (Lovibond 54° cell), 15Y/3R max. Chemical properties: reactions are similar to oleic acid and can be used

for the same applications. Availability: commercial quantities including tankcars. Emery Industries, Inc.

## OLEIC ACID VEGETABLE, LOW TITER

Emery 0-844-R. Similar to above except with a titer in the range of 8C. Availability: pilot quantities; commercial quantities on reasonable advance notice. Emery Industries, Inc.

## OXAMIDE

$\text{NH}_2\text{COCNH}_2$  M.W. 88. White monoclinic needles. M.P. 417 C, partially sublimed when heated; Density 1.667; Solubility, 1 part in 2700 parts of water at 7 C; 6 parts in 1000 parts of water at 100 C. Suggested use: Stabilizer for nitrocellulose; intermediate in organic synthesis. Availability: Research quantities. Victor Chemical Works.

## PHENYLTRICHLOROETHANOL

$(\text{C}_6\text{H}_5)_3\text{CHOHCCl}_3$  M.W. 225.5; B.P. 15 mm, 145C; Sp.G. 25/4, 1.422; R.I. 25C, 1.564; Density 1.172/gal.; acidity as  $\text{HCl}$ , 0.1% max.; Viscosity 25C, 86.2 cp; Flash P. (open) 159C; light amber liquid; insol. in  $\text{H}_2\text{O}$ , completely sol. in ethanol, diethyl ether and  $\text{CCl}_4$ . Chemical properties: Its bifunctional character makes this material effective for a wide variety of chemical reactions. Suggested Uses: Intermediate in the preparation of perfume bases, pharmaceuticals, polymerizable monomers, insecticides, fungicides and other agricultural chemicals. Availability: development quantities. Westvaco Chemical Division.

## PIPERIDONE-2

M.W. 99.08; B.P. 265C at 760 mm. Hg.; M.P. 39-40C; white crystalline solid. Chemical properties: A cyclic amide which undergoes reactions typical of N-substituted amides, yielding delta-aminovaleric acid or ester on hydrolysis or alcoholysis. Suggested uses: Intermediate for the preparation of pharmaceuticals, resins, rubber chemicals and dyestuffs. Availability: research quantities for experimental use. Carbide and Carbon Chemicals Co., a Div. of Union Carbide and Carbon Corp.

## POTASSIUM TRIPHOSPHATE

$\text{K}_3\text{P}_3\text{O}_{10}$ . Sequestering value—9.0g. Ca./100g. KTPP. Sol. in  $\text{H}_2\text{O}$ , 30C.—200g./100g.  $\text{H}_2\text{O}$ . Heat of Sol., 18C.—10.5 kcal./mole; total  $\text{P}_2\text{O}_5$  46.7% by wt.; total  $\text{K}_2\text{O}$  51.8% by wt.;  $\text{pH}$  1% sol. 9.9; white powder. Chemical properties: Shows a pronounced ability to sequester or prevent the formation of insoluble soaps by forming soluble phosphate complexes with calcium, iron and magnesium ions. Suggested uses: Formulation of liquid soaps, sequestering agent, dispersing agent. Commercially available. Westvaco Chemical Division.

## PROPYLENE CARBONATE

M.W. 102.09; Sp.G. 1.2069 at 20/20C.; B.P. 242.1C at 760 mm. Hg.; F.P.—48.8C; Visc. 2.8 cps at 20C.; R.I. at 20C., 1.4200; Sol. in water, 19% by wt. at 20C.; Sol. of water in, 2% by wt. at 20C.; completely miscible with acetone, methanol, ethyl ether, benzene, carbon tetrachloride. Chemical properties: Reacts with numerous amines, phenols, alcohols and similar compounds containing an active hydrogen to give beta-hydroxypropyl derivatives. Suggested uses: Solvent for certain natural and synthetic resins, intermediate in the synthesis of pharmaceuticals, agricultural chemicals, rubber additives, and other organic chemicals. Availability: research quantities. Carbide and Carbon Chemicals Co., Div. of Union Carbide and Carbon Corp.; Jefferson Chemical Co., Inc.

## PROTOVERATRINE

$\text{C}_{18}\text{H}_{25}\text{O}_3\text{N}$  M.W. 272; M.P. 258C, (dec.). An alkaloid. White crystalline solid, strongly sternutatory. Obtainable from *Veratrum viride* or *Veratrum Album*. It is a triester of the alkaline protoveratrine,  $\text{C}_{18}\text{H}_{25}\text{O}_3\text{N}$ . Protoveratrine is conjugated with Acetic, Methylacetic and Methylthylacetic acids. Hypotensive activity is 0.25/kg/min. for 10 minutes by Stutzman-Maison method of assay. Availability: research quantities. Riker Laboratories, Inc.

## PSUEDOCUMIDINE

$\text{CaH}_2(\text{CH}_2)_6\text{NH}_2$  M.W. 135.11; distillation range 220-245C. Soluble in benzene; very slightly soluble in water. Properties: A primary amine susceptible to all reactions of its class. Suggested uses: Solvent, intermediate for dyes and pharmaceuticals. Availability: commercial quantities. The Hilton-Davis Chemical Co. Div.

## SILICON POWDERS

Dark grey crystalline powder, 20 mesh, metallic luster. Suggested uses: As a semiconductor,

in the preparation of silicon crystals for crystal rectifiers in microwave receivers. Availability: Previously supplied at 99.75% purity, now available at 99.85% and 99.95% purity in commercial quantities. Tungsten and Chemical Division, Sylvania Electric Products, Inc.

## SILVER METAPHOSPHATE

$(\text{AgPO}_3)_x$ . A powdered glass which does not discolor on exposure to light. Very slightly soluble in water. Refractive index near 1.7. Softening point about 200 C. (Converts to crystalline form if held at 200 C.) Typical analysis: Ag 57.2%,  $\text{P}_2\text{O}_5$  37.2%, loss at 800 C. 1.6%. Suggested use: Special optical glass. Availability: pilot-plant quantities. Victor Chemical Works.

## SODIUM ASCORBATE

$\text{C}_6\text{H}_7\text{O}_5\text{Na}$  M.W. 198.11; M.P. 218C. (decomposition); soluble in water, 85.4 g/100 ml at 25C. Suggested uses: Tasteless source of vitamin C; antioxidant; preparation of sterile solutions for parenteral injections. Commercially available. Chas. Pfizer and Co., Inc.

## SODIUM COPPER CHROMATE, BASIC

$\text{Na}_2\text{O} \cdot 4\text{CuO} \cdot 4\text{CrO}_3 \cdot 3\text{H}_2\text{O}$  M.W. 572.73; slightly soluble in water with partial hydrolysis; finely crystalline purplish brown powder. Suggested uses: as anti-corrosion and anti-fouling pigment for marine paints; may possess mildew-inhibiting and fungicidal properties. Availability: pilot-plant quantities. Mutual Chemical Co. of America.

## SODIUM GLUCONATE

$\text{NaC}_6\text{H}_{11}\text{O}_7$  M.W. 218.13; soluble in water, 59 g/100 ml at 25C.; white crystalline powder (refined grade); tan-colored crystalline powder (technical grade). Suggested uses: Sequesterant for iron in all pH ranges and in the presence of free caustic; photographic processing aid; metal plating baths; mineral tanning of leather; water-base paints; emulsifier for processed cheese. Commercially available. Chas. Pfizer and Co., Inc.

## SODIUM SULFIDE, REAGENT, PENTAHYDRATE CRYSTAL

$\text{Na}_2\text{S} \cdot 5\text{H}_2\text{O}$  Form. Weight, 168.14. In the new pentahydrate form, the compound is temperature-stable and will not melt or become discolored during storage at temperatures up to approximately 90C. The older form, with 9 waters of crystallization, would melt in its own water at 38C.—45C. Prepared in dry crystal form, forms a clear, colorless solution in water. Used as an analytical reagent; in manufacture of dyes, photographic preparations; in desulfurizing viscose rayon; as a chemical intermediate. Availability: laboratory reagent. J. T. Baker Chemical Co.

## STYRENATED FATY ACIDS

Intermediate with no free styrene odor for preparing styrenated alkyl resins of quick set and dry. At 100% solids: M.P. 60C.; acid no. 68.75; styrene content, 48%. At 60% solids in xylol: color, 12 gardner; viscosity, E.H. Availability: commercial quantities. Woburn Chemical Corp.

## TETRAETHYLAMMONIUM DIHYDROGEN ORTHOPHOSPHATE

$(\text{C}_2\text{H}_5)_4\text{N} \cdot \text{H}_2\text{P}_2\text{O}_4$ . A white crystalline powder, extremely soluble in water. Suggested use: In pharmaceuticals. Availability: experimental quantities only. Monsanto Chemical Co.

## TETRAHYDROXYRAN-2-METHANOL

$\text{CH}_3\text{CH}_2\text{OCH}(\text{CH}_2\text{OH})\text{CH}_2\text{CH}_2\text{OH}$  M.W. 116.16; Sp.G. 1.0272 at 20/20C.; B.P., 187.0C at 760 mm. Hg.; V.P., 0.4 mm. Hg. at 20C.; Viscosity, 11.0 cps at 20C.; R.I. at 20C., 1.4581; sol. in water, complete at 20C. Chemical properties: Reacts as a primary alcohol; ring structure more stable than tetrahydrofuran ring. Suggested uses: Esters formed with dibasic acids and long chain monocarboxylic acids are of interest as plasticizers for vinyl resins; high-boiling solvent and coupling agent; preparation of surface-active agents and lubricating oil additives. Availability: development quantities. Carbide and Carbon Chemicals Co., Div. of Union Carbide and Carbon Corp.

## TETRAMETHYLOL ACETYLENE DIUREINE

M.W. 262.22; M.P., 137-138C; Sol. in water, approx. 50% by wt. at 25C. Chemical properties: Contains four reactive hydroxyl groups and two ketone groups, which make it useful as a cross-linking and insolubilizing agent for proteins and polyhydroxyl materials such as starch and "Cellulose" hydroxyethyl cellulose.

—\* Trade-mark

Suggested uses: It is of primary interest as a resin for shrink-proofing and crease-proofing textile fabrics. Availability: research quantities. Carbide and Carbon Chemicals Co., Div. of Union Carbide and Carbon Corp.

## THIOPHOSPHORYL CHLORIDE

$\text{PSCl}_3$  M.W. 169.4; Sp.G. 25/4, 1.630; B.P., 119-127.5C; 95% (2.5-97.5ml) 4.0C. max.; clear, colorless to slightly yellow liquid; characteristic pungent odor. Suggested uses: A basic intermediate for production of high-activity insecticides such as parathion and other thiophosphates, and as an additive for lubricating oils and extreme pressure lubricants. Commercially available. Westvaco Chemical Division.

## TRICHLOROETHANOL

$\text{CCl}_3\text{CHOH}$  M.W. 149.5; B.P. 765 mm. 150 C; F.P. 13 C min.; Sp.G. 25/4 1.541; Acidity as  $\text{HCl}$ , 0.1% max.; R.I. 25 C 1.4854; Viscosity 25 C 18.4cp; colorless liquid which gradually turns to a deep purple color; sl. sol. in  $\text{H}_2\text{O}$  but completely sol. in ethanol and  $\text{CCl}_4$ . Chemical Properties: Fundamentally those of a primary aliphatic alcohol but has weak acid properties since, under carefully controlled conditions, the Na salt can be prepared using NaOH. Suggested Uses: Intermediate in the preparation of pharmaceuticals, extreme pressure lubricant additives, herbicides, anti-oxidants and stabilizers for use in rubber and synthetic resins, flame proofing agents for textiles. Availability: development quantities. Westvaco Chemical Division.

## TRICHLORONITROPROPANOL

$\text{CCl}_3\text{CHOHCH}_2\text{CH}_2\text{NO}_2$  M.W. 208.4; Sp.G. 45/4, 1.605; M.P. 42 C; B.P. 5 mm. 200 C. Density 1.53 g/ml; R.I. 35 C 1.501; Flash P. (open) 177.7 C; crystalline solid; partially sol. in  $\text{H}_2\text{O}$  and  $\text{CCl}_4$ , completely sol. in ethanol and diethyl ether. Chemical Properties: Capable of a wide variety of reactions by virtue of its tri-functional character. Suggested Uses: As a plasticizer and softening agent, coupling agent, anti-foam agent; and as an intermediate in the preparation of agricultural chemicals, pharmaceuticals, anti-oxidants, stabilizers, resin-curing agents, petroleum additives. Availability: development quantities. Westvaco Chemical Division.

## TRIETHYL THIONOPHOSPHATE

$(\text{C}_2\text{H}_5)_3\text{PS}$  M.W. 198.22; clear, colorless to straw-colored liquid. B.P., 100C. at 16 mm. and 216C. at 745 mm. (decom). Crystallization Point, approx. 2.1C.; R.I., 1.447 at 25C.; Sp.Gr., 1.064 at 25/25C.; characteristic, strong odor; wt. per U.S. Gallon, 8.9 at 25C. Sol. in benzene, heptane, carbon disulfide, carbon tetrachloride, ethanol, methanol, acetone, ethyl acetate, ethyl acetate; insol. in water. Surface tension, dynes/cm. 29.65 at 20C. Distilled material is now available in large laboratory quantities. Larger quantities may be supplied in the future if interest develops. Suggested use: intermediate for chemical syntheses. Availability: large laboratory quantities. Monsanto Chemical Co.

## TRIHXYL PHOSPHITE

$(\text{C}_6\text{H}_5)_3\text{P}$  M.W. 334.5; Sp.G. 0.897 at 20/4C.; R.I., 1.4420 at 20C.; B.P., 135-41 C at 0.2 mm.; flash point 160C.; fire point 180C.; insol. in water, hydrolyzes very slowly; miscible with alcohol, acetone, benzene, ether, heptane, carbon tetrachloride and most of the common organic solvents. Chemical properties: Undergoes selective reactions with organic and inorganic reagents and is useful in preparing phosphates, phosphonates, thiophosphates, pyrophosphates, hypophosphates, and other organic compounds of phosphorus for use in dyestuffs, pigments, plastics, and pharmaceuticals. Availability: semi-commercial quantities. Virginia-Carolina Chemical Corp.

## TRISOCTYL PHOSPHITE

$(\text{C}_8\text{H}_{17}\text{O})_3\text{P}$  M.W. 418.6; Sp.G., 0.891; R.I., 1.4498 at 20C.; B.P., 161-4C/0.3 mm.; flash point 195C.; fire point 210C.; insol. in water, hydrolyzes very slowly; miscible with alcohol, acetone, benzene, ether, heptane, carbon tetrachloride, and most of the common organic solvents. Chemical properties: Undergoes selective reactions with organic and inorganic reagents and is useful in preparing phosphates, phosphonates, thiophosphates, pyrophosphates, hypophosphates, and other organic compounds of phosphorus for use in dyestuffs, pesticides, pharmaceuticals, lubricants, and plastics. Availability: semi-commercial quantities. Virginia-Carolina Chemical Corp.

## 2,4,7-TRINITROFLUORENONE

$\text{C}_{13}\text{H}_5\text{N}_3\text{O}_6$  M.W., 315.19; M.P., 175.5-176.5C.;





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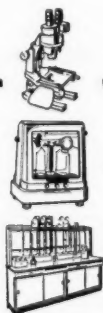
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color, bright yellow crystalline. Enters into complex formation with polynuclear hydrocarbons and their derivatives. The complexes are brightly colored and of high, sharp, melting points. Suggested uses: Ease of formation and stability of complexes makes possible identification of condensed ring system compounds. Availability from stock, in research quantities, Dajac Laboratories, Div. Monomer-Polymer, Inc.

#### TRI-2-PROPYLPHOSPHITE

$[(CH_3)_2CHO]_3P$ , M.W., 208.2; Sp.G., 0.914 at 20/4°C.; R.I., 1.4101 at 20°C.; B.P., 94-6°C. at 50 mm.; flash point 75°C.; fire point 70°C.; insol. in water, slowly hydrolyzes; miscible with alcohol, acetone, benzene, ether and most of the common organic solvents; odor, sweet characteristic; colorless liquid. Chemical properties: Undergoes selective reactions with organic and inorganic reagents and is useful in preparing phosphates, phosphonates, thiophosphates, pyrophosphites, hypophosphites, and other organic compounds of phosphorus for use in dyestuffs, pesticides, pharmaceuticals, lubricants, and plastics. Availability: semi-commercial quantities, Virginia-Carolina Chemical Corp.

#### TRISILVER ORTHOPHOSPHATE

$Ag_3PO_4$ . A brilliant yellow powder, insoluble in water and common organic solvents. Suggested uses: As a Catalyst; raw material for special glass formulations; antiseptic and biocide; special pigments. Availability: experimental quantities, Monsanto Chemical Co.

#### UREA, RADIOACTIVE, C-14

$(NH_2)_2CO$ , M.P., 132. Specific Activity 1.0 millicuries per millimole. In order to procure this radioactive compound, authorization from the U.S. Atomic Energy Commission must be obtained. Suggested uses: Intermediate for the preparation of carbon-14-tagged purines, barbiturates, and other pyrimidine-urea containing plastics. Availability: in millicurie quantities, Tracerlab, Inc.

#### VINYL BENZOATE

$CH_2=CHOCOC_6H_5$ , M.W., 148.15; Sp.G., 1.0703 at 20/20°C.; B.P., 172°C. at 300 mm. Hg.; V.P., 0.2 mm. Hg. at 20°C.; R.I., at 20°C., 1.5266; Visc., 1.8 cps. at 20°C.; only liquid; sol. in water, less than 0.01% by wt. at 20°C.; Sol. of water in, 0.32% by wt. at 20°C. Chemical properties: Polymerizes slowly alone and copolymerizes with other ethylenic monomers. Polymers have good water-resistance and have higher softening points than polyvinyl acetates. Polymers are brittle at low temperatures. Suggested uses: Copolymers are useful as coating resins for textiles and for leather substitutes. Copolymers with vinyl acetate are compatible with certain phenolic resins, providing excellent coating for metals, water-repellent coatings for wrapping paper, and resin bases for washable wall paints. Availability: research quantities, Carbide and Carbon Chemicals Co., a Div. of Union Carbide and Carbon Corp.; Monsanto Chemical Co.

#### VINYL BUTYRATE

M.W., 114.14; Sp.G., 0.9022 at 20/20°C.; B.P., 116.5°C. at 760 mm. Hg.; F.P., -86.8°C.; R.I., at 20°C., 1.4102; V.P., 14.5 mm. Hg. at 20°C.; Visc., 0.60 cps. at 20°C.; sol. in water in, 0.30% by wt. at 20°C.; completely miscible with acetone, benzene, ethyl ether, heptane, methanol, carbon tetrachloride. Chemical properties: Polymerizes alone and copolymerizes with other ethylenic monomers. Polymers are more water-resistant than polyvinyl acetates, and less brittle at low temperatures. Suggested uses: Preparation of specialty rubbers, laminating resins, pressure sensitive adhesives, chewing gum resins, coating compounds for metals, textiles and leather. Availability: research quantities, Carbide and Carbon Chemicals Co., a Div. of Union Carbide and Carbon Corp.

#### VINYL CROTONATE

$CH_2=CHOCCH=CH_2$ , M.W., 112.12; Sp.G., 0.9434 at 20/4°C.; B.P., 133.5°C. at 760 mm. Hg. Chemical properties: Polymerizes and copolymerizes with other ethylenic monomers. Homopolymers are relatively brittle and are insoluble in water and most organic solvents. Bi-functionality makes it useful as cross-linking agent; when used as a copolymer can be made to polymerize in two steps, the second step providing a cross-linking or curing action. Suggested uses: As cross-linking agent in various copolymers to raise the softening point and increase chemical and abrasion resistance. Availability: research quantities, Carbide and Carbon Chemicals Co., a Div. of Union Carbide and Carbon Corp.

#### VINYL-2-ETHYL HEXOATE

M.W., 170.24; Sp.G., 0.8751 at 20/20°C.; B.P., 185.5°C. at 760 mm. Hg.; V.P., 0.3 mm. Hg. at 20°C.; R.I., at 20°C., 1.4262; sol. in water, less than 0.01% by wt. at 20°C.; sol. water in, 0.20% by wt. at 20°C.; Visc., 1.2 cps. at 20°C. Chemical properties: Polymerizes alone and copolymerizes with other ethylenic monomers to give polymers that are more water-resistant and less brittle at low temperatures than polyvinyl acetates. Suggested uses: Polymers and copolymers are of interest as coating compounds for metals, textiles, and leather; pressure sensitive adhesives; laminating resins; and specialty rubbers. Availability: research quantities, Carbide and Carbon Chemicals Co., a Div. of Union Carbide and Carbon Corp.

#### VINYL FORMATE

$CH_2=CHCOOH$ , M.W., 72.06; Sp.G., 0.9651 at 20/20°C.; B.P., 46.6°C. at 760 mm. Hg.; V.P., 270 mm. Hg. at 20°C.; R.I., at 20°C., 1.3859; Visc., 0.36 cps. at 20°C.; colorless liquid, sol. in water; hydrolyzes at 20°C.; completely miscible with acetone, benzene, ethyl ether, heptane, methanol, carbon tetrachloride at 25°C. Chemical properties: Polymerizes readily alone and copolymerizes with other ethylenic monomers. Polyvinyl formates are clear solids, harder than polyvinyl acetates. They are more resistant than polyvinyl acetate to solvents such as gasoline hydrocarbons. Polyvinyl formate is rapidly hydrolyzed by heating with water alone to give polyvinyl alcohol. Suggested uses: Pharmaceutical intermediate; preparation of specialty rubbers, coatings for metals, paper, textiles, and leather; preparation of polyvinyl alcohol which is widely used as a binder, thickener, stabilizer and sizing material. Availability: research quantities, Carbide and Carbon Chemicals Co., a Div. of Union Carbide and Carbon Corp.

#### N-VINYL PIPERIDONE-2

M.W., 125.096; B.P., 230°C. at 760 mm. Hg.; M.P., 42°C.; white crystalline solid. Chemical properties: Undergoes reactions typical of disubstituted amides and compounds containing the vinyl group. Suggested uses: Resin monomers, plasma extenders. Availability: Research quantities for experimental use, Carbide and Carbon Chemicals Co., a Div. of Union Carbide and Carbon Corp.

#### VINYL PROPIONATE

M.W., 100.11; Sp.G., 0.9173 at 20/20°C.; B.P., 94.9°C. at 760 mm. Hg.; V.P., 35 mm. Hg. at 20°C.; Visc., 0.50 cps. at 20°C.; sol. in water, 0.82% by wt. at 20°C.; sol. of water in, 0.60% by wt. at 20°C.; completely miscible with acetone, benzene, ethyl ether, heptane, methanol, carbon tetrachloride. Chemical properties: Polymerizes alone, copolymerizes with other ethylenic monomers. In general, polyvinyl propionates are more water-resistant than polyvinyl acetates and are less brittle at low temperatures. Suggested uses: Preparation of specialty rubbers, pressure sensitive adhesives, chewing gum resins, laminating resins, coatings for metals, metal, and leather. Availability: research quantities, Carbide and Carbon Chemicals Co., a Div. of Union Carbide and Carbon Corp.

#### VINYL TRIMETHYL NONYL ETHER

M.W., 212.36; Sp.G., 0.8075 at 20/20°C.; B.P., 223.5°C. at 760 mm. Hg.; V.P., 0.05 mm. Hg. at 20°C.; Fr.P., -90°C.; sol. in water, less than 0.01% by wt. at 20°C.; sol. of water in, 0.14% by wt. at 20°C. Chemical properties: Undergoes additional reactions typical of compounds containing the ethylenic linkage; polymerizes alone or copolymerizes with other ethylenic monomers. Suggested uses: Preparation of polymers and copolymers for use as pressure sensitive adhesives, laminating resins, coating resins, and viscosity-index improvers for hydraulic fluids; pharmaceutical intermediate. Availability: research quantities, Carbide and Carbon Chemicals Co., Div. of Union Carbide and Carbon Corp.

### SPECIALTIES

#### ACOLIN

This refined tall oil is very much like Acosin in its physical and chemical characteristics, but it has been further processed to improve its odor and color. Fatty Acids, 68%; Rosin Acids, 26%; Unsaponifiable, 6%; Acid Value, 178; Saponification Value, 184; Sp. Gr., 0.943; Color, 4.5 (Hellige); Viscosity, G-II (Gardner). Suggested uses, see Acosin. Commercially available. Newport Industries, Inc.

#### ACONON

This refined tall oil has a slightly higher fatty

acid content and lower rosin acid content than either Acolin or Acosin, and has an extremely low unsaponifiable content. Fatty Acids, 72%; Rosin Acids, 25%; Unsaponifiable, 3%; Acid Value, 187; Saponification Value, 191; Sp. Gr., 0.937; Color, 5-6 (Hellige); Viscosity, C-D (Gardner). Suggested uses, see Acosin. Commercially available. Newport Industries, Inc.

#### ACOSIN

A refined and distilled tall oil which has a pale color, mild tall oil-like odor, and a low unsaponifiable content. Fatty Acids, 68%; Rosin Acids, 29%; Unsaponifiable, 3%; Acid Value, 188; Saponification Value, 191; Sp. Gr., 0.933; Color, 5-6 (Hellige); Viscosity, C-D (Gardner). Suggested uses are tall oil esters for adhesives, core oils, binders, linoleum, printing inks, varnishes; tall oil soaps; metallic soaps for driers, gloss oils; sulphonated and sulphurized oils. Commercially available. Newport Industries, Inc.

#### ACRYLOID B-82

A colorless acrylic coating polymer, similar to Acryloid B-72, but substantially less expensive. Solids: 40±1%; Solvent, toluol; Viscosity, 200-700 centipoises; Appearance, colorless and clear; Weight per gallon, 8.1 pounds. May be reduced with aromatic solvents, esters, ketones, and chlorinated hydrocarbons; tolerance for aliphatic naphthas is limited; may be pigmented. Performance characteristics: Excellent resistance to discoloration under severe weathering conditions, alkalis, acids, and chemical fumes. Good flexibility and adhesion in both clear and pigmented films. Inert to practically all pigments, including luminescent and fluorescent types. Uses: Specialty coatings, either alone or modified with other film formers, for metal, wood, fabric, plastic sheet, and film. Pigmenting is served as a vehicle for white enamel for kitchen stoves and other products subjected to elevated temperatures. It acts as a plasticizer for vinyl resins or nitrocellulose and as a vehicle for luminescent or fluorescent pigments. Available in commercial quantities. Rohm & Haas Co.

#### ACRYLON RUBBERS

Acrylon BA-12 and EA-5 are acrylic rubbers composed of acrylic esters and acrylonitrile. In addition to properties normally associated with acrylic rubbers, such as resistance to heat, hot oils, extreme pressure lubricants, oxygen, ozone, and sunlight, both rubbers have good bonding water resistance. Acrylon BA-12, in particular, possesses good flexibility at low temperatures. These materials find use in such fields as automotive, aircraft, oil, industrial equipment, commercial and home appliances, and other services, for use as oil, water and coolant seals. O-rings, gaskets, packings, belts, hose, protective coatings, and adhesives. Data sheet. Available in commercial quantities. American Monomer Corp.

#### ADE-50 COMPOUND

N-alkylbenzyl-N, N-diethyl-N-ethanolammonium chloride, technical grade, 50% solution. A high molecular weight quaternary ammonium germicide and cationic surface active agent. Typical physical coefficients on the as-is basis at 20°C. (F.D.A. Method Bulletin #198) *S. aureus* 30 and *S. typhosa* 169. Odorless and non-toxic at use dilution. Useful as a germicide, fungicide, general sanitizer and deodorant. A superior cationic wetting agent, compatible with nonionic surface active agents in detergent-sanitizer compositions. Available from pilot plant. Oronite Chemical Co.

#### AGRILON NA

A hydrolyzed polyacrylonitrile sodium salt solution.  $(CH_2CH_2COO Na)_n$ . Concentration, 15%; pH 7-8; viscosity @ 25°C., 5,000 cps.; straw colored; Sp.Gr., 1.08; Use: soil-conditioner. Available in carloads. American Polymer Corp.

#### AGRILON P

Sodium salt of a hydrolyzed polyacrylonitrile. White powder, free flowing, 25% active. Use: soil-conditioner. Available in carload quantities. American Polymer Corp.

#### AGRIMUL PC

A balanced neutral emulsifier for pentachlorophenol. This liquid will mix clear with solvent solutions of pentachlorophenol. The quantity of pentachlorophenol can be varied in the concentration to contain 10%, 20% and as high as 40% pentachlorophenol. The resulting concentrates exhibit excellent shelf life and produce stable emulsions merely by their addition to water with slight agitation. Pentachlorophenol

emulsions are useful in preventing bacterial growth in latex emulsions, as defoliates for cotton, as wood preservatives, and in termite and wood micro-organism control. Commercially available. Nopco Chemical Co.

## AMBERLITE IR-45

Weakly basic anion exchanger, shipped in the fully regenerated free base form as uniform, attrition resistant beads. Density: 42 pounds per cubic foot. Moisture content: 40-50%. Screen grading (wet): 20-50 mesh (U. S. Standard Screens). Effective size: 0.40-0.45 mm. Uniformity coefficient: 1.8 max. Voids: 35-45%. Operable pH range: 0-7. Exchange capacity (as  $\text{CaCO}_3$  per cubic foot): 27 kilograins at 3.5 pounds NaOH per cubic foot regeneration level. Characterized by: resistance to acids, bases and solvents; lack of color throw; stability at temperatures as high as 212°F. Uses: with Amberlite cation exchange resins in all types of deionization systems, particularly Monobed. Special applications include adsorption of acids, exchange of anions, isolation and concentration of pharmaceuticals, disposal of acidic wastes, recovery of metals. Available in commercial quantities. Rohm and Haas Co.

## AMBERLITE IR-112

A strongly acidic, modified polystyrene nuclear sulfonic acid type cation exchanger of high porosity and intermediate exchange capacity. Shipped in the sodium form as moist, completely swollen beads. Density: 47 pounds per cubic foot. Moisture content: 60-65%. Screen grading (wet): 16-50 mesh (U. S. Standard Screens). Effective size: 0.45-0.6 mm. Uniformity coefficient: 2 max. Fines content (through 50 mesh screen): less than 1%. Voids: 45-50%. Characterized by: high efficiency at low regeneration levels, attrition resistance, stability at temperatures as high as 250°C. over the entire pH range; resistance to acids, bases, oxidizing and reducing agents, and solvents. Uses: domestic, industrial and municipal water softening; split stream dealkalization, deionization and special applications (e.g., catalysis, decolorization). Available in commercial quantities. Rohm and Haas Co.

## AMBERLITE IR-112 (H)—Analytical Grade

Highly refined, chemically pure (C.P.) grade of Amberlite IR-112, supplied in the hydrogen form. Uses: applications include adsorption of organic bases, exchange of complex metallic cations and acid catalysis. Rohm and Haas Co.

## AQUASPERSE 1440-36

A cationic vehicle designed for the manufacture of latex paints. Excellent pigment wetting and dispersing properties. Casein content: 35%. Viscosity 105-110 K.U. pH 8.9. Suggested paint formulations using Aquasperse 1440-36 available. American Resinous Chemicals Corp.

## ARCCOS 1044-27A and 1044-27B

These emulsions designed for heat bonding of various combinations of paper, cloth and various films and foils. Films possess high gloss and excellent grease and water resistance. Provide wide heat seal range, high block resistance, and excellent adhesion properties. American Resinous Chemicals Corp.

## ARCCO 1044-29A

This solution provides heat seal bonds on a variety of surfaces. Arcco 1044-29A is designed for glassine, but also has good adhesion to aluminum foil. Heat seals at a range from 225° to 350°. Non-blocking at 120°F., one lb./sq. in./24 hrs. Solvents used do not affect rubber plates. May be applied by conventional coating equipment. Other compounds available. Heat sealing waxed glassine bags, candy bar wraps, etc. American Resinous Chemicals Corp.

## ARCCO 1314-28C

A heat seal solution for fabrics. Used by manufacturers of heat seal tapes, edge sealing tapes, rug bindings, labels, etc. Deposits a flexible, tackfree film heat sealable at 300-400°F. Excellent adhesion to cotton, wool, rayon, paper, leather and vinyl plastics. Bonds are resistant to dry cleaning and laundering. Solids 50%. American Resinous Chemicals Corp.

## ARCTIC SYNTAX HD

Heavy duty synthetic detergent for industrial cleaning. An alkyl aryl sulfonate detergent built with polyphosphate and silicate alkalies. Physical form, spray-dried beads; color, white; density, 0.34 gm/cc. Exhibits high detergency; unaffected by hard water or metal salts; effective in acid, alkaline or neutral solutions. Uses: laundering (all fabrics); textile scouring (all fibers

and fabrics); rug and upholstery cleaning; industrial cleaning (metals, storage tanks, paper-making felts, etc.); washing laboratory glassware and equipment, windows, floor and wall surfaces, motor vehicles and trains, etc. Commercially available. Colgate-Palmolive-Peet Co.

## BARALYME CARBON DIOXIDE ABSORBENT

Compressed cylindrical pellets of calcium hydroxide and barium octohydrate in homogeneous mixture. Intended for use in the absorption of carbon dioxide in anesthesia, oxygen therapy, metabolism tests, gas masks and underwater diving units. Pellets are 3/16" in diameter by 1/8" long. Pellets are colored pink with an indicator which changes to blue when the pellets have reached a state of continued inefficient absorption. Commercially available. Thomas A. Edison, Inc.

## BASE ML

The synthetic methyl ester of mixed fatty acids, title 30C; form, clear liquid; color, amber; specific gravity, 0.882; viscosity, 45 S.S.U. at 100°F.; acid value, 4; solubility, soluble in all fatty and petroleum oils. A highly polar and easily emulsified, oiliness additive for way oils, break-in oils, rolling oils, water-soluble oils, and cutting oils. Carlisle Chemical Works, Inc.

## BENZOYL PEROXIDE CATALYST 35

Contains 35% Benzoyl Peroxide with inert filler. A new, extremely fine, white, free-flowing powder which can be used or handled safely without any special precautions. Specially designed for use in the silicone rubber and plastics industry. May also be used wherever benzoyl peroxide is required and where its color or filler is not objectionable. Commercially available. Cadet Chemical Corp.

## CALCOCID LEATHER BROWN G, GD, R

A family of acid dyes designed especially for use on leather. They will produce clear uniform shades ranging from yellow-browns to red-browns on either grain or suede leathers. They work well on either chrome tannage or syntans. They have been applied on kid, calf, side-leather or sheep. Calco Chemical Div., American Cyanamid Co.

## CALCODUR RESIN FAST BLUE 2G

A fast-to-light direct blue dye which was developed specially for use under resin finishes. It yields a fairly bright blue with greenish cast. Very little shade change is noticeable after resin treatment with or without copper and the lightfastness holds up remarkably well. Calco Chemical Div., American Cyanamid Co.

## CALCODUR RESIN FAST BLUE 2R

A fast-to-light direct dye which produces a clear red shade blue when applied to cellulosic fabrics. It was developed especially for use under resin treatments. Such treatments cause little or no shade change. The lightfastness of this dye under resin treatments is very good. Calco Chemical Div., American Cyanamid Co.

## CALCODUR RESIN FAST ORANGE 5G

A fast-to-light direct dye which produces a bright clear yellowish orange on cellulosic fiber. It was developed especially for use under resin treatments. When so treated there is little or no shade change and but slight change in light fastness. Calco Chemical Div., American Cyanamid Co.

## CALCOFLUOR WHITE MR and 2R CONC.

These products are optical whitening agents designed especially for laundry soaps and synthetic detergents. Calco Chemical Div., American Cyanamid Co.

## CALCO NAPHTHOSOL AS DOUBLE SOLUTION

A solution of Naphthol AS designed especially for use with Calcozoic solutions in the preparation of textile printing mixtures. In addition this solution is convenient to use in normal naphthol dyeing. Calco Chemical Div., American Cyanamid Co.

## CALCO NAPHTHOSOL SWF DOUBLE SOLUTION

A solution of Naphthol AS-SW designed especially for use with Calcozoic solutions in the preparation of textile dyeing and printing mixtures. It is also a convenient form of Naphthol AS-SW to use in most conventional naphthol dyeing procedures. Calco Chemical Div., American Cyanamid Co.

## CALCO OIL BLUE N AND ZN

These are oil soluble blues of the anthraquinone type that are characterized by excellent solubility in aromatic hydrocarbon solvents and good solubility in regular petroleum solvents. Calco Chemical Div., American Cyanamid Co.

## CALCOPAD PASTES

A line of aqueous dispersions of carefully selected pigments designed especially for padding on to fabrics in combination with oil-in-water emulsions of resins. Since the pigments were chosen because of their resistance to light fading, these dispersions are well suited for the producing of pastel shades. These pastes are also compatible with aqueous resins of the urea and melamine-formaldehyde types. Calco Chemical Div., American Cyanamid Co.

## CALCO SOLUBLE VAT YELLOW GC

A stabilized leuco vat ester, which when applied to fabrics by dyeing or printing techniques, will produce bright greenish yellow shades. It can be used wherever soluble vat dyes are indicated. Calco Chemical Div., American Cyanamid Co.

## CALCOTONE RED 2B PASTE

An aqueous dispersion of an organic red pigment that is especially recommended for the paper trade. A full range of shade from pastel pinks to deep reds can be produced when the pigment is added to the beater or applied as a coating. Calco Chemical Div., American Cyanamid Co.

## CALCOZOIC BLUE B SINGLE SOLUTION

A solution of the stabilized diazo of Fast Blue B Base which is designed for ready miscibility with Naphthosols and Naphthosol Solutions. When properly prepared the resultant mixture is suitable for printing cellulosic fabrics. Calco Chemical Div., American Cyanamid Co.

## CALCOZOIC RED KB SINGLE SOLUTION

A solution of the stabilized diazo of fast Red KB Base which is designed for ready miscibility with Naphthosols and Naphthosol Solutions. When properly prepared such mixtures are suitable for printing cellulosic fabrics. Calco Chemical Div., American Cyanamid Co.

## COLLOCARB

Collocarb is a combination of 80% of any carbon black and 20% process oil. Collocarb retains the rubber reinforcing characteristics of the carbon black, with greatly improved processing qualities, as a result of intimate blending of oil and black at the time of production. Its dust-free characteristics make Collocarb very desirable for open-mill mixing. Collocarb is supplied in pellet form, in 50 lb. bags or bulk shipments. J. M. Huber Corp.

## CYANAMID ALUMINUM STEARATE G-100, G-200, G-300

Three new grades of aluminum stearate for lubricating grease manufacture. These are manufactured from a blend of fatty acids, contain a percentage of dimerized linoleic acid, which gives greases of improved gel stability. Commercially available. American Cyanamid Co.

## CYANAMID 1304 ANTI-STATIC AGENT

An alkylamido quaternary ammonium complex; clear straw colored liquid at 30°C., solidifying at 5-10°C., active solids approximately 50% pH 7 to 7.5 for a 1% solution; acid and alkali stable; also stable in storage. This product has the property of rendering materials highly anti-static. Commercially available. American Cyanamid Co.

## CYFOR

A fortified rosin size giving increased water, ink and lactic acid resistance to papers and boards; gives a higher size test in papers needing an extra "boost" in sizing. The product is shipped at 70% solids. Commercially available. American Cyanamid Co.

## DEFOAMER E D

An amber colored liquid containing some suspended particles. An ester type material of coconut fatty acids. Addition of 0.2-1.0% of Defoamer E D by the manufacturer of rubber latex water emulsion paints causes the dissipation of bubbles when paint is applied with a brush or roller. It is also used in other cases for preventing troublesome foaming such as in glues, etc. Commercially available. El Dorado Oil Works.





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Since Sperm Oil has a negligible free fatty acid content, it does not oxidize, harden, or form metallic soaps. As a result, "cementing" of stacked sheet or plate can be prevented by Sperm Oil coating.

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## CW Report

### DIMER 120

A pale, high melting, permanently refuseable resinous material, predominantly dibasic in character, Color N; M.P., 119°C. (Cap. Tube); Acid Value, 145. Soluble in petroleum solvents, drying oils, alcohols, esters, and ethers. Compatible with a wide range of film forming materials. Suggested uses are synthetic resins, paper coatings, spirit varnishes, printing inks. Commercially available. Newport Industries, Inc.

### DISPERSANT NI-8586

Liquid nonionic surface active agent. A high molecular weight condensate soluble in all proportions in hard or soft water (except forms gels in the 25-80% range) and at all concentrations in mineral spirits, acetone and lower alcohols. Chemically stable in the presence of strong acids and alkalis. Density 8.75 pounds per gallon at 68°F. Compatible with anionic and cationic surface active agents. A superior wetting agent, useful in the preparation of oil-in-water emulsions. A relatively low foaming detergent with outstanding cotton detergency, especially when compounded with polyphosphate builders. Compositions can be spray dried or chemically dried if desired. Also useful as a detergency booster in built anionic compositions. Available in limited commercial quantities. Oronite Chemical Co.

### DISPERSANT NI-8393

Liquid nonionic surface active agent. A molecular weight condensate miscible in all proportions with common solvents such as mineral spirits, mineral oil, vegetable oils, acetone and alcohol; insoluble in water. Density, 8.43 pounds per gallon at 68°F. An excellent emulsifier for water-in-oil emulsions; capable of suspending large quantities of finely divided solids in solvent media; useful in formulation of dry cleaning "soaps," insecticide emulsions, cosmetic preparations, and similar applications. Available in limited commercial quantities. Oronite Chemical Co.

### DU PONT 80% CMU WEED KILLER

An 80% active wettable powder composition based on CMU, 3-(p-chlorophenyl)-1,1-dimethylurea. Technical CMU is a greyish-white crystalline solid, sparingly soluble in polar organic solvents such as acetone and only very slightly soluble in water (230 p.p.m. at 25°C.); low solubility in petroleum oils. Melting range 169-8°C.-170.4°C.; after recrystallization from methanol it is obtained as thin rectangular prisms which melt at 170.5°C.-171.5°C. Essentially non-volatile and non-flammable. Acute oral toxicity to rats (LD<sub>50</sub>): 3.5 g./kg. Commercially available for use as a soil sterilant for long-term control of a wide range of grass and herbaceous weeds on non-crop land, such as petroleum tank farms, railroads and manufacturing plant sites. E. I. du Pont de Nemours and Co., Inc., Grasselli Chemicals Dept.

### DU PONT MANZATE FUNGICIDE

A 70% active wettable powder formulation containing manganese ethylenedisithiocarbamate. The technical product is a light-tan colored solid which is slightly soluble in water and insoluble in most common organic solvents. Acute oral toxicity (LD<sub>50</sub>) to rats: 7.5 g./kg. body weight. Commercially available for control of principal foliage and fruit fungus diseases of tomato and for early blight and late blight of potato. E. I. du Pont de Nemours and Co., Inc., Grasselli Chemicals Dept.

### DURAPLEX C-58

A phthalic alkyl coating resin, primarily for metal decorating. Solids: 60%±1%; solvent, mineral thinner. Viscosity (40% in mineral spirits) Gardner, D-F; viscosity as supplied (Gardner), Z+; Acid number (solids), 10 max.; Color (Gardner), 7 max.; Phthalic anhydride (solids), 32%; Type oil, soya; weight per gallon, 7.9 pounds. Performance characteristics: Excellent flow and leveling, hot slip, gloss and gloss retention, color and color retention, air drying and baking speed, fabricating properties, resistance to weathering. Good compatibility with varnishes, oils, alkyds; brushing, resistance to alkali and chemicals. Uses: For sprayed or brushed, air-dried or baked architectural enamels, trade-sales coatings and farm-implement paints. Available in commercial quantities. Rohm and Haas Co.

### DUTCH BOY BENTONE BLUE®

New organic compound of mon-morillonite. Useful as Blue pigment. Gives a reddish undertone when used as a blue colorant in vinyls and other resins for film and sheeting compounds.

Predispersed paste for easy incorporation, resists staining and bleeding, very stable to heat and light. Available for experimental investigation. National Lead Co.

#### ELDOBASE

A mixture compounded from glycerine, coconut fatty acid esters, lanolin and other ingredients to form a base for the preparation of lotions and creams. Eldobase is a solid melting around 45°C. In the molten condition it is easily emulsified with water in various proportions to give a liquid, cream or paste. Commercially available. El Dorado Oil Works.

#### EMULSIFIER BASE

A concentrated aromatic low cost emulsifier; forms "self emulsifying solvents" with orthodichlorobenzene, kerosene, gasoline, xylol, naphtha, mineral oil and similar hydrocarbon and chloroaromatic hydrocarbons. 10% Solvent Solution clear, 10% water solution clear. Flash 190°F., pH 10.6. Commercially available. The Curran Corp.

#### EXPERIMENTAL DETERGENT 9X123

An alkali stable non-ionic wetting agent and detergent, classified as an alkyl benzyl polyethylene glycol ether. Designed for use with strong alkalies such as caustic soda. pH of 1% solution, 5.0-8.0. Available in developmental quantities. Rohm and Haas Co.

#### FLAKED METALLIC LEAD

A bronze powder type of metallic lead, containing less than 1% stearic acid and stearates. Specific formulations show the coatings resist chemical corrosion conditions. Samples on request. Metalcad Products Corp.

#### FLEXOL<sup>®</sup> PLASTICIZER CC-55

$\text{C}_{18}\text{H}_{35}\text{O}_2\text{COOCH}_2\text{CH}(\text{C}_6\text{H}_5)\text{C}_6\text{H}_5$ . M.W., 397.59; S.G., 0.9586 at 20/20°C.; B.P., 216°C. at 5 mm. Hg.; Vapor pressure, 2.2 mm. Hg. at 200°C.; Visc., 42.1 cps. at 20°C.; Pour point, -53°C.; Flash point (Cleveland open cup), 425°F.; Coefficient of expansion, 0.00077 per °C. at 20°C.; Insol in water at 20°C.; Sol. of water in, 0.3% by wt. at 20°C.; Color, 50 pt-Co.; Electrical properties: Power factor, 2% at 25°C.; D.C.R.,  $1 \times 10^6$  megohm-cm at 25°C. "Flexol" plasticizer CC-55 is a primary plasticizer for vinyl chloride resins. It is used to produce calendared and extruded products as well as plastisols having low viscosities. Suggested uses: In garden hose, handbag and upholstery sheeting, slush molded dolls and toys, electrical insulation, and general-purpose vinyl film. Availability: commercial quantities. Carbide and Carbon Chemicals Co., Div. of Union Carbide and Carbon Corp.

#### FLO-KLEAR

A concentrated, homogeneous mixture of liquid non-ionic detergents. Product is an amber colored liquid having a flash point of not less than 300°F. Is completely miscible with all dry cleaning solvents—both petroleum and synthetic. Uses: As a dry cleaning detergent in either petroleum solvent or synthetic solvent dry cleaning systems at a constant concentration of 1/2 to 1% to 3% for the removal and suspension of soil from the fabrics. Commercially available. Pennsylvania Salt Manufacturing Co.

#### GLVLA EMULSION S-56

This is Shawinigan's new emulsion developed for quick tack adhesives. Maximum particle size is two to three microns. It is specially recommended for high speed work where quick-tack is essential. Shawinigan Products Corp.

#### GLVLA EMULSION TS-60

A high solids polyvinyl acetate emulsion giving superior film properties. Properties: 56% solids, pH 4.6, emulsion viscosity 850 cps. Brookfield No. 3 at 30 RPM, 1480 cps. Scott Cup. Gives a continuous clear film. Film demonstrates excellent scrubability in 1% soap solution in Gardner Washability Test. Particle size about one micron. Heat-seal temperature of film 170-180°F. Uses: Adhesive, emulsion paint base, textile size and binder. Availability: pilot-plant quantities. Shawinigan Products Corp.

#### HYDROXYETHYL STARCH

A white, fine particle solid that is readily soluble in cold water. Viscosity of a 5% aqueous solution, 1500-2500 cps. at 20°C. Suggested uses: non-staining adhesive, protective colloid, thickening agent, sizing agent for textiles and paper. Availability: development quantities from pilot plant. Carbide and Carbon Chemicals, Div. of Union Carbide and Carbon Corp.

\* Trade-mark

#### HYPONATE L-50

M.W., 415. An alkyl aryl oil soluble petroleum sulfonate; oil-free, neutral, salt free. It has the following typical composition: sulfonate, 52.0%; water, 47.5%; oil, 0.5%; inorganic salt, none. Suggested uses: As an emulsifier and/or emulsion stabilizer in the emulsification and emulsion polymerization of various synthetic resins; as a fat splitting catalyst; as an emulsifier in those emulsion systems where mineral oil present in the emulsifier would be a disadvantage and an oil free petroleum sulfonates is indicated. Availability: commercial quantities. L. Sonnenborn Sons, Inc.

#### ISOSTYRE

Styrenated dehydrated castor oil with no styrene odor. For rapid drying hard protective coatings of exceptional water alcohol and alkali resistance with outstanding adhesion, gloss and color retention, good can stability. Suggested uses: Pigmented films for outside and inside use; clear films for sealers, metal protection. Supplied in mineral spirits of E.B.49 at 70% solids; viscosity, 25-27; at 50% solids, viscosity M-P; acid No. 100% solids, 6 maximum; Color, 6 maximum at 50% solids. Commercially available. Woburn Chemical Corp.

#### KATHON L-4

Low volatile herbicide. Tetra hydro furfuryl ester of 2,4-D acid. Contains 4 lbs. of 2,4-D acid equivalent per gallon. Used especially for brush control in areas where sensitive crops are grown. Mixes readily with oil or water. Available commercially in 1, 3 and 50 gal. containers. Rohm and Haas Co.

#### KEL-F HIGH TEMPERATURE THERMO-PLASTIC

High polymer of trifluorochloroethylene. Kel-F is supplied in the form of plasticized and unplasticized molding powders which may be easily fabricated on conventional machines by injection, compression, transfer and extrusion molding techniques. Kel-F is chemically inert; possesses low cold flow; can be used over a temperature range of 210°F. from -320°F. to +390°F. has outstanding electrical properties; zero moisture absorption; is readily colored; possesses excellent clarity in thin sections. The M. W. Kellogg Co.

#### KEL-F OILS, GREASES AND WAXES

Low molecular weight trifluorochloroethylene. A series of compounds ranging from light oils to waxes with pour points from -35°F. to +135°F. having boiling points from 230°F. to 446°F. and higher. The oils, greases and waxes can be blended to any desired intermediate viscosity; can be used at very low temperatures and as high as 450°F. have similar electrical properties to those of the Kel-F high polymers; are highly resistant to action of corrosive chemical agents; may also be used for lubricating purposes and plasticizers. The M. W. Kellogg Co.

#### KESSCO 40

A self-emulsifying grade of glyceryl monostearate. Anionic, cream-colored, wax; M.P., 58-60°C. Stable to light, heat and oxidation. Recommended for cleansing, vanishing and cold creams, hand and hair formulations. Suitable for o/w and w/o emulsions. Also an effective stabilizer for fluid emulsions. Commercially available. Kessler Chemical Co., Inc.

#### KESSCOFLEX 103

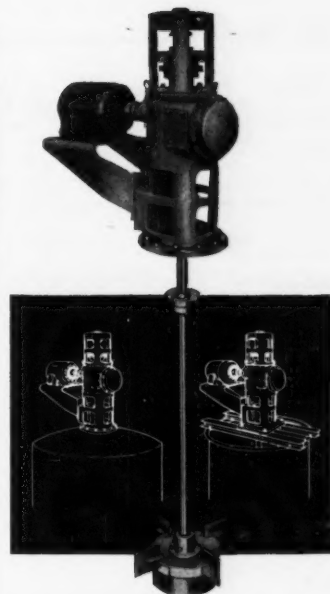
Plasticizer. Compatible with polyvinyl chloride, copolymers, cellulose nitrate, ethyl cellulose and synthetic rubbers. Outstanding properties are low temperature performance, low volatility and plasticizing efficiency. Imparts good hand and drape to vinyl films. Potentially of value in preparation of viscosity-stable plastisols and organosols. Commercially available. Kessler Chemical Co., Inc.

#### KESSCOMIR

Water-white, light viscosity oil; faint odor; acidity 0.5% max.; S.G., 0.850; F.P. 0 to -7°C.; insoluble in water. Outstanding emollient for cosmetic and pharmaceutical preparations; solvent for G-11. Softener and lubricant for lipsticks, rouge and cream powders. Commercially available. Kessler Chemical Co., Inc.

#### LUPOSEC

This product is a mixture of wax and acetate of alumina and is used for water-proofing in the textile industry. A liquid, commercially available; usually shipped in barrels or drums. Jacques Wolf and Co.



**"Lightnin<sup>®</sup> Mixers"**  
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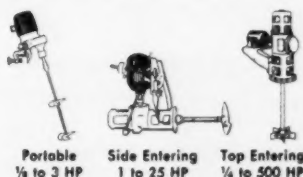
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## LUSTREX F

A thermoplastic molding powder in granular form having exceptionally good dimensional stability and toughness, relatively low water absorption, excellent electrical properties, good chemical resistance, superior surface hardness and abrasion resistance. Suitable for wide range of applications. Can be readily fabricated on standard injection, compression and extrusion machines, employing general techniques used with thermoplastic materials. Suggested uses: Gear applications, housings, valve-sealing material battery cases. Available in pilot-plant quantities. Monsanto Chemical Co., Plastics Div.

## MERLON

Modified Polyvinyl resin in solid form. Soluble in aqueous alkaline solution including ammonium hydroxide. Uses recommended: finishing of textile fabrics like cotton, rayon, and blends to produce a durable, stiffened effect. Availability: commercial quantities. Monsanto Chemical Co., Merrimack Div.

## METACHROME BLUE SU

A new chrome blue for wool. Dyes wool by all three chrome methods. Exceptionally fast to light. Commercially available. Poughkeepsie Dyestuff Corp.

## METACHROME RED F CONC.

A new chrome red for wool. Dyes wool by all three chrome methods. Exceptionally fast to light. Commercially available. Poughkeepsie Dyestuff Corp.

## MIST

A neutral spot removing compound containing specially blended non-ionic surfactants. This dry cleaning spotter is an optically clear, non-volatile, viscous liquid of light amber to straw color having practically no odor. Uses: By the dry cleaner for the safe and effective removal of food stains, ink and dye stains when used in its concentrated form and for the removal of blood stains when used with ammonia. Commercially available. Pennsylvania Salt Manufacturing Co.

## MONOPLEX 5-38

Low cost primary monomeric plasticizer of high molecular weight for vinyl compounds. Appearance, clear, dark; Acid number (mgm. KOH/gm.), 5.0 max.; Viscosity (Gardner, 25°C.), K-W; Solidification temperature, 1°C.; Specific gravity (25°C./15°C.), 0.936; Flash point, 530°F. Performance characteristics: compatible with a wide range of materials, efficient, displays satisfactory processing attributes and good resistance to organic solvents. Uses: pocket-book stocks, electrical jacketing, tubing flooring extruded moldings, and wetting. Available in commercial quantities. Rohm and Haas Co.

## MONOPLEX 5-71

Moderately priced monomeric plasticizer-stabilizer for vinyl compounds. Appearance, clear; Color (Varnish scale), 1; Acid number (mgm. KOH/gm.), 0.1; Viscosity (25°C.), 14-22 centipoises; Flash point: 395°F. Specific gravity (25°C.), 0.901. Performance characteristics: Imparts excellent flexibility at low temperatures, has good plasticizing efficiency and contributes very significantly to stabilization toward heat and light. Compatible with many other plasticizers. Except where plasticizer concentration is low, should be used in blends. Uses: vinyl upholstery, sheeting, coated fabric, light weight film, garden hose, electrical jacketing, dispersion compounds for casting and slush molding, injection molding and semi-rigid formulations. Available in commercial quantities. Rohm and Haas Co.

## MORFLEX 120-DICAPRYL PHTHALATE

A new Di-Capryl Phthalate characterized by low odor and color; for plasticizing vinyl and other synthetic resins. Commercially available. Morton-Withers Chemical Co.

## MORFLEX 130-DIDECYL ADIPATE

A new low temperature plasticizer for vinyl and other synthetic resins; characterized by both low temperature flex and low volatility providing qualities comparable to Di-Octyl Sebacate at much lower cost. Color 50 APHA maximum; acid (as acetic) 0.1% maximum. Commercially available. Morton-Withers Chemical Co.

## MORFLEX 130-DIDECYL PHTHALATE

A new vinyl plasticizer characterized by extremely low volatility, providing dimensional

stability to such products as vinyl floor and wall coverings. Color 50 APHA maximum; acid (as acetic) 0.1% maximum. Commercially available. Morton-Withers Chemical Co.

## MORFLEX 175-OCTYLDICYL PHTHALATE

An octyl-decyl phthalate plasticizer made from newly available alcohols; color 50 APHA maximum; acid (as acetic) 0.1% maximum; for use in plasticizing vinyl and other synthetic resins; characterized by low volatility and color; better hand to film and sheeting and excellent electricals. Commercially available. Morton-Withers Chemical Co.

## NEOPRENE TYPE WRT

An improved general-purpose neoprene characterized by very low compression-set, outstanding heat resistance and reduced tendency toward crystallization at moderately low temperatures as compared with other neoprenes. Other properties are similar to other types of neoprene. Commercially available. E. I. du Pont de Nemours and Co., Organic Chemicals Dept.

## NEOPORT 5 RESIN

A Terpene Phenolic resin produced from alpha pinene. Color X-WG; M.P., 98°C. (Cap. Tube), 118°C. (B.R.); Sp. Gr. 1.03; Soluble all proportions in toluol, acetone, butanol, ethyl acetate, turpentine, mineral spirits, V.M. & P. naphtha, linseed oil, tung oil, soya bean oil, dehydrated castor oil. Compatible with a variety of resins and vinyls. Suggested uses: In adhesives, naphtha type paper coatings, extender for vinyl resins in coatings. Commercially available. Newport Industries, Inc.

## NEOPORT 5-86 RESIN

A neutral terpene phenolic resin produced from alpha pinene. Color, X; M.P., 86°C. (Cap. Tube), 105°C. (B.R.); Sp. Gr. 1.03; Soluble all proportions in toluol, acetone, butanol, ethyl acetate, turpentine, mineral spirits, V.M. & P. naphtha, linseed oil, tung oil, soya bean oil, dehydrated castor oil. May be used in liquid and paste type wax polishes as an extender for Carnauba and other waxes. Commercially available. Newport Industries, Inc.

## NEOPORT V-40 RESIN

A terpene phenolic resin produced from alpha pinene. Color, X-WG; M.P., 98°C. (Cap. Tube), 117°C. (B.R.); Sp. Gr. 1.05; Soluble all proportions in toluol, acetone, butanol, ethyl alcohol, ethyl acetate, turpentine, isopropyl alcohol 91% and 99%, linseed oil, tung oil, soya bean oil, dehydrated castor oil. Compatible with a variety of resins, vinyls, and zein. Suggested uses are adhesives, alcohol-type paper coatings, extender for vinyl resins in coatings, shellac substitutes, and aniline inks. Commercially available. Newport Industries, Inc.

## NILOX

A pale, disproportionated rosin which exhibits excellent resistance to oxidation. Color, X-WG; WW; M.P., 62°C. (Cap. Tube); 85°C. (B.R.); Acid Value, —162; Saponification Value, 163.5. Suggested uses are rubber adhesives, emulsifier in cold rubber production. Commercially available. Newport Industries, Inc.

## NINEX 21

A foam-stabilized liquid detergent concentrate containing 60% active material. Besides excellent sudsing power, Ninex 21 exhibits high viscosity on dilution, and is non-rusting in steel containers. Recommended for dishwashing, car washing, bubble baths, etc. Ninol Laboratories.

## NINOL A62

A nonionic alkylolamide-type detergent possessing excellent foam-strengthening and stabilizing properties for alkyl aryl sulfonates or alcohol sulfates. Also exhibits unusually high viscosity in aqueous solution. Ninol Laboratories.

## NOBS NO. 1

A vulcanization accelerator for rubber having delayed action characteristics. A selected blend of N-Oxydiethylene benzothiazole-2-sulfenamide and benzothiazyl disulfide. Specific gravity 1.39; Softens at 70-75°C.; Very good stability; characteristic, sweet odor. Suggested application: In both natural and synthetic rubber, especially in conjunction with high abrasion furnace blacks. Available in commercial quantities. Calco Chemical Div., American Cyanamid Co.

## NOPCOGEN C-5

A polyoxyethylene fatty amide alcohol. Soluble in water; in 50% sulfuric acid; in 10% sodium

hydroxide; and in many inorganic salt solutions. Activity, 100%; color, dark brown liquid. Exhibits surface tension reduction properties in very small concentrations. Suggested uses: Rayon spin bath additive. Utilized at a concentration of less than 100 parts per million will effectively eliminate deposition of craters on face of the spinnerette. Will also eliminate crystallization of inorganic salts from spin bath, and facilitate filtration of the spin bath to remove agglomerated insoluble matter. Also suggested for use in many industrial processes where elimination of borderline salt crystallizations are bothersome; where slow filtration rates can be speeded by coagulation of fines and colloidal particles; where surface tension reduction is required in acid, alkaline or inorganic salt solutions. This reduction of surface tension frequently increases the rate of drainage of solutions from surfaces. In gas forming processes, such as metal pickling, the bubbles break quickly without creating a disagreeable spray or mist. Commercially available. Nopco Chemical Co.

## NOPCOSIZE VNK

Polyvinyl acetate emulsion having the following chemical and physical properties: solids, 55% minimum; pH 3.5-4.5; particle size 1-2 microns average; emulsion type nonionic; specific gravity 1.042; viscosity 800-1000 cps. Brookfield. Nopcosize VNK produces a clearer, more flexible film having greater water resistance than the conventional polyvinyl acetate emulsions. Coupled with this greater flexibility is a heat sealing temperature about 10-15°C. lower than ordinary making unnecessary, in many instances, the use of added plasticizer. The lower tack point has been produced by internal plasticization thereby eliminating the possibility of plasticizer migration. If lower tack point is desirable, the emulsion tolerates the addition of up to 30% dibutyl phthalate on the as-is basis. This emulsion can be used alone or compounded with other resins, starches, clays, plasticizers and thickeners as the individual problem requires. Adhesives can be prepared which are suitable in packaging and lamination involving aluminum, cellophane and plastic sheeting, luggage and related leather goods, heat seal labeling, padding, bookbinding and wood fabrication. Commercially available. Nopco Chemical Co.

## PAPER PRODUCT 2219

A non-ionic surface active agent specifically designed to impart softness to un-sized papers such as napkins, facial tissues, etc. Developed for slush-coat addition. It is a brown liquid, 100% active ingredients; soluble in warm water up to 25%. Commercially available. American Cyanamid Co.

## PAPER PRODUCT 2220-A

A non-ionic surface active agent for use as a de-sizing or re-wetting agent in paper towels and other absorbent type papers. It is a brown liquid, 80% active ingredients; complete solubility in warm water. Commercially available. American Cyanamid Co.

## PAPER PRODUCT 2262

A surface active agent for surface application to control absorbency and re-wetting characteristics in saturating papers, towelling and napkins grades, wet-strength window wiping tissue, etc. It is amber-colored liquid, 50% active ingredients, infinitely soluble in water. Commercially available. American Cyanamid Co.

## PAPER PRODUCT 2287

A synthetic sizing agent giving high water, ink and lactic acid resistance to papers sized at alkaline or acid pH. Designed for slush coat addition or surface application. It is a light brown solid flaked material, 100% active. Trial quantities available. American Cyanamid Co.

## PARAZ RESIN 614

A cationic urea formaldehyde wet strength resin of high efficiency. It is a light yellow, clear, pourable syrup, stable for at least three months at 90°F. or lower; miscible in all proportions with water. Commercially available. American Cyanamid Co.

## PENCO DE-FOL-ATE

A chlorate-type cotton defoliant based on magnesium chlorate as the active ingredient and containing a fire-suppressant designed for application to mature cotton plants as an aqueous spray. It is readily soluble in water, very hygroscopic, and contains no boron. Penco De-Fol-Ate is usually applied at the rate of ten pounds of product in ten gallons of water per acre. Commercially available. Pennsylvania Salt Manufacturing Co.



# It's time we got working mad!



As we listen to the latest insults from Moscow, we're likely to get fighting mad.

Instead, we'd better use our heads and get *working* mad.

It is clear by now that Stalin and his gang respect just one thing—strength. Behind the Iron Curtain they've been building a huge fighting machine while we were reducing ours. Now we must rebuild our defenses—*fast*.

As things stand today, there is just *one* way to prevent World War III. That is to re-arm—to become strong—and to stay that way!

This calls for better productivity all along the line. Not just in making guns, tanks and planes, but in turning out civilian goods, too.

Arms must come first. But we must produce arms *at the same time* we produce civilian goods.

We can do this double job if we all work together to turn out more for every hour we work—if we use our ingenuity to step up productivity.

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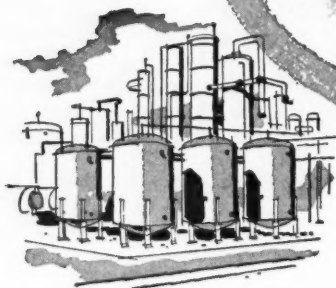
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## PENNPAIN 229

A chlorinated aliphatic hydrocarbon base coating for protection against corrosion. Product applies at 3 to 4 mils thickness per coat with brush or spray application. Uses: Protection of metal and masonry against corrosive fumes. Coating was especially developed for use in the company's chemical plants and is now offered to all industries handling corrosive materials. Commercially available. Pennsylvania Salt Manufacturing Co.

## PENNSALT EC-5

A soap based emulsifying agent formulated to give compatibility with water and with petroleum solvents. Contains special rust inhibiting agent. For use this product is extended with up to ten volumes of petroleum solvent and the resulting mix emulsified with up to 100 volumes of water. Steel parts cleaned in this emulsion are protected against in-plant rusting for 1 to 4 weeks. Commercially available. Pennsylvania Salt Manufacturing Co.

## PENNSALT EC-51

A solvent emulsion cleaner based on Pennsalt EC-5 extended with a special blend petroleum solvent of the kerosene range. Product is emulsified in up to 100 volumes of water to provide cleaning action and rust inhibition in spray washing applications. Commercially available. Pennsylvania Salt Manufacturing Co.

## PENNSALT EC-54

A solvent emulsion consisting of a high flash, high boiling solvent blend plus a rust inhibiting emulsifier. It has a flash point of 260°F., fire point 300°F., and 95% boils off within the range of 490 to 620°F. For use in spray washing applications where an emulsion cleaner must be used at high temperatures with no boil-off of solvent and no undue fire hazard. Commercially available. Pennsylvania Salt Manufacturing Co.

## PENNSALT ENDOTHAL

Endothal is disodium 3,6-endoxohexahydrophthalate and is formulated into several different types of agricultural and specialty products. Pennsalt Endothal Defoliant S-4069 is being offered for sale commercially for cotton defoliation in limited areas. Other formulations have given considerable promise as a pre- and post-emergence herbicide in certain crops and as a crop desiccant or harvest aid. Wide scale experimental work on many of these uses is being continued in the field this season. Pennsylvania Salt Manufacturing Co.

## PENNSALT FURANE CEMENT

A cold-hardening, poly furfural-alcohol type resin cement. Product is sold as a liquid and a powder which are mixed to a smooth mortar. Mortar sets up to form dense, hard, joints which exhibit excellent resistance to alkalies, solvents, greases and most acids, at temperatures up to 350-375°F. Uses: For jointing all types of acid-proof brick and tile construction, including pickling tanks, floors, walls, drains, etc. Commercially available. Pennsylvania Salt Manufacturing Co.

## PENNSALT PB-1

An alkaline product compounded with petroleum based foam depressants and special organic dispersing agents. Used at 1/4 oz./gal. in water curtain type paint spray booths to float paint and keep booth parts clean. Commercially available. Pennsylvania Salt Manufacturing Co.

## PENNSALT PENTRETE

A liquid seed disinfectant for treating wheat, barley, oat, and flax seeds. The active ingredient is a phenyl mercuric ammonium complex which is water soluble and of very low vapor pressure. This product is designed for use in slurry seed treating machines and controls seed-borne diseases such as smut, bunt, and damping off and protects the seedlings from soil-borne organisms that cause seed decay and seedling blight. The liquid mercurial formulation is simpler and safer to use than dry dusts and provides better, more uniform coverage. Commercially available. Pennsylvania Salt Manufacturing Co.

## PENNSALT SC-25

A controlled blend of surface active agents, soaps and other materials in an aliphatic naphtha, balanced to make possible the solution of otherwise insoluble substances. This liquid cleaner is clear, light brown with practically no odor, having a flash point above 190°F. Uses: For removal of grease, oil and other soils espe-

cially from confined places such as diesel locomotive engine rooms, ship's bilges, etc. Commercially available. Pennsylvania Salt Manufacturing Co.

## PENSUDS

A mildly built, synthetic base Wet Cleaning detergent. This detergent is a dry white to tan granular material designed to give maximum detergency in either hard or soft water. Uses: In dry cleaning plants for Wet Cleaning both fugitive and non-fugitive garments by hand or in the washwheel. Commercially available. Pennsylvania Salt Manufacturing Co.

## PENTHON

Formulations of O, O-dimethyl dithiophosphate of diethyl mercaptosuccinate which has been shown by extensive field testing to be one of the safest and most effective of the new chemicals for control of mites and aphids on various fruits and other crops. Penthon E-50 is a 50% emulsifiable concentrate containing five pounds of actual active ingredient per gallon. Penthon W-25 is a wettable powder containing 25% active ingredient designed for use as a water suspension or for the preparation of more dilute finished dust formulations. Commercially available. Pennsylvania Salt Manufacturing Co.

## PETROLEUM SULFONATES, SYNTHESIZED

Highly refined, light colored, oil-soluble sulfonates of greater than normal activity due to the presence of combined SO<sub>3</sub> in greater than mono-sulfonation amounts. Mol. weights—300, 400, 475, 600 and 700; color 2 NPA; free salts under .5%. Suggested uses: base for lube-oil additives, rust and corrosion inhibitors, cutting and metal working oils, soluble oils, dry cleaning soaps, detergents and as fat splitting agents. Availability: tank car quantities. Morton-Withers Chemical Co.

## POLYCO 446

An internally plasticized vinyl chloride copolymer dispersion in water. Solids 45%. pH 4 to 5. Viscosity 10 to 20 cps @ 25 C. Forms clear, transparent films on drying at ordinary temperatures. Uses: coating and saturant for leather, paper, textiles. Available in commercial quantities. American Polymer Corp.

## POLYCO 447

Polyvinyl acetate copolymer dispersion. Solids 61%. Viscosity 3,000 cps. @ 25 C, pH 6 to 7. Uses: additive for starch, dextrine, and tapioca adhesives. Available in commercial quantities. American Polymer Corp.

## POLYCO 458

Polyvinyl acetate copolymerized in ethanol-ethyl acetate solvent. Solids 55%. Uses: Non-blocking, high gloss, scuff-resistant coatings. Available in commercial quantities. American Polymer Corp.

## POLYCO 470

A 55% polyvinyl acetate copolymer water dispersion. pH 4 to 5. Viscosity 1200 cps @ 25 C. Uses: additive for Portland Cement, plaster, etc., to impart self-curing properties, increase tensile strength, resilience. Commercially available. American Polymer Corp.

## POLYCO 476

Internally plasticized polyvinyl chloride dispersion in water. Solids 45%; pH 4 to 5. Viscosity 10 to 20 cps @ 25 C. Forms clear, transparent films. Uses: coating for paper, leather, textiles. American Polymer Corp.

## POLYCO 479

A plasticized polystyrene in aqueous dispersion. Solids 45%, pH 8.5 to 9.5; viscosity @ 25 C 50 to 100 cps. Use: latex paint binder. Available in commercial quantities. American Polymer Corp.

## POLYCO 482

Aqueous dispersion of a polystyrene having very fine particle size. Solids 40%. pH 4 to 6. Viscosity @ 25 C. 10 to 25 cps. Use: Floor-wax additive for imparting scuff-resistance and anti-slip properties. Available in commercial quantities. American Polymer Corp.

## POLYCO 1360-29

Polyvinyl acetate copolymer dispersion adhesive. pH 6.5. Viscosity 2500 cps @ 25 C. Use: All purpose adhesive. Freeze-resistant. Available in commercial quantities. American Polymer Corp.

## POLYESTER RESINS PDL 7-669-679-680

Three new resins that withstand prolonged temperatures up to 500 degrees F. without losing strength. PDL 7-669 is a general purpose resin; PDL 7-680 is a fire resistant (self extinguishing resin containing antimony trioxide), and PDL 7-679 is a crystalline resin for impregnating mat or cloth. These resins, reinforced with glass class, will give flexural strength values during exposure at 500 F. of from 30,000 to 35,000 pounds per square inch. These resins are expected to find application in heat-resistant airplane parts, durable ovenware for bakeries and the home, etc. American Cyanamid Co.

## REZYL 405-18

An oil-modified alkyd resin for incorporation in paints. It can be used to produce flat finishes on a wide variety of surfaces—from enamel to wall paper—without showing differences in color or gloss. Makes paints easier to brush, quicker drying, and higher in scrub-resistance. American Cyanamid Co.

## RHONITE R-2

Aqueous solution of a thermosetting resin for textile finishing. Solids content: High. Specific gravity: 1.21. pH: essentially neutral. Viscosity (Gardner): F.T. Appearance: colorless, clear. Performance characteristics: easily handled, stable without refrigeration, durable to washing. Uses: for dimensional stabilization of viscose rayon fabrics, embossed finishes on nylon, cotton, springy finishes on nylon and silk, embossing of nylon fabrics, stiffening nylon and acetate fabrics, reducing thread slippage of synthetic fabrics. Available in commercial quantities. Rohm and Haas Co.

## SOYASTYRE

Styrenated soyabean oil with no styrene odor. For quick drying protective coatings with good water and alkali resistance and good adhesion, gloss and color retention. Suggested uses: Pigmented films for outside and inside use; clear films for sealers, metal protection. Supplied at 70% solids in mineral spirits K.B.37. Viscosity, 23.25; color, 12 Maximum; acid No., 100% solids-R Maximum. Commercially available. Woburn Chemical Corp.

## STABILIZER 6162 DOP

A non volatile, light yellow, viscous liquid having a density of 1.07. Insoluble in water but miscible in all proportions with common organic solvents. Similar to DOP (dioctyl phthalate) in compatibility. Suggested Uses: Combines light stabilizing and plasticizing action for vinyl resins. Particularly interesting for plastics. Availability: Samples and pilot-plant quantities. Victor Chemical Works.

## STEARANILIDE, EMERY A-805-R

Stearanilide is a hard, relatively high-melting wax-like material with essentially no odor. Melting point, 80-82 C; Hardness (Shore Durometer 15), 60-70; Solid Color, Light Tan; Acid Value, 2.4; Flash Point, 480 F. Fire Point, 535 F. Because of its wax-like character, and compatibility with other waxes, stearanilide shows promise as a wax or wax extender for polishes, carbon paper, paper coatings, textile auxiliaries, etc. Availability: experimental quantities. Emery Industries, Inc.

## STEARONE, EMERY C-846-R

A crystalline solid with practically no odor or taste. M. P. 74-76.5 C; Color, light straw; Acid Value, 2; Flash Point, 510 F; Fire Point, 565 F. Emery Stearone is a hard, relatively high-melting, wax-like product derived from commercial stearic acid. Since the latter is actually a mixture of stearic and palmitic acids, Stearone consists of a mixture of the corresponding ketones. Suggested uses: as a wax or wax extender. Availability: experimental quantities. Emery Industries, Inc.

## TETRA HYDRO FURFURYL ESTER CONCENTRATE OF 2,4-D ACID

Low volatile 2,4-D ester for brush and weed control. 96% purity. Readily soluble in aromatic and most petroleum solvents. Available commercially. Rohm and Haas Co.

## TITANOX-C-30\*

New rutile-calcium pigment composed of 50% rutile titanium dioxide and 50% calcium sulphate. White pigment intermediate in hiding power between "pure" rutile titanium dioxide and ordinary 10% rutile-calcium pigment. Suitable for a wide variety of paint and other com-



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### TOXIMUL

The family name of a new series of anionic agricultural emulsifying agents, characterized by the extremely high dispersibility imparted to emulsifiable concentrates of Toxaphene, chlordane, etc. Ninol Laboratories.

### TRITON X-102

Surface active compound of the alkyl aryl polyether alcohol type, hot water soluble. It is a non-ionic detergent and emulsifier with a cloud point of about 85-92 C. The high solubility and stability of Triton X-102 in hot cleaning baths suggest applications in metal cleaning and similar operations. Specific gravity, 1.062-1.071. Soluble in water, aromatic hydrocarbons, ether, alcohol, chlorinated hydrocarbons, glycol, pH of 5% solution, 7.9. Available commercially. Rohm and Haas Co.

### TRITON X-114

Low foaming surface active non-ionic compound used as wetting agent, detergent, emulsifying and dispersing agent. It is a non-ionic compound in the alkyl aryl polyether alcohol group. Triton X-114 gives excellent detergency on hard surfaces and fabrics, rapid wetting and rinsing, compatibility with alkalis and other detergents—and most important in many applications—low foaming. Specific gravity, 1.05, pH of 5% sol, 7.9. Soluble in esters, ketones, aromatic hydrocarbons. Available commercially. Rohm and Haas Co.

### TRITON X-177

Agricultural emulsifier containing an emulsion stabilizer, corrosion inhibitor and foam reducer. It is a blend of an alkyl aryl polyether alcohol and a modified phthalic glycerol alkyl resin. Triton X-177 is an effective emulsifier for DDT and for esters of 2,4-D and 2,4,5-T acids. Specific gravity, 1.00-1.02. pH of 5% solution, 8.3-9.5; soluble in aromatic-type oils. Available commercially. Rohm and Haas Co.

### TRITON X-188

A general purpose emulsifier for chlorinated insecticides and weed killers. Triton X-188 is a blend of alkyl aryl polyether alcohols with an emulsion stabilizer. Specific gravity, 1.005-1.025, soluble in aromatic type oils, pH of 5% solution, 7.9. Available commercially. Rohm and Haas Co.

### UFORMITE 400

An high-solids, aqueous urea-formaldehyde resin adhesive for hot press, cold bonding, lumber-core gluing by clamp-carrier or high frequency, reaggregated wood bonding, and other specialty applications. Suitable for bulk shipment and storage; at 75 F., has a useful life of six months. Has excellent viscosity stability, may be used with low cost extenders. Requires catalyst. Available in tank-car quantities. Rohm and Haas Co.

### UFORMITE 711

Cationic, nitrogenous wet strength resin for paper. Solids content; 35% in water. Viscosity (Gardner), D-P, pH; 7.5-8.5. Appearance: clear, pale straw color. Performance characteristics: 55-65% ultimate wet strength off the machine, easily prepared, convenient pH control with acid or alkali, insensitive to sulfate ion. The resin may be added at any point on the machine. Available in tank-car quantities. Rohm and Haas Co.

### UFORMITE F-158

An urea-formaldehyde coating resin utilizing propyl instead of butyl alcohol as modifier. Solids content, 48-52%; solvent (7:3 propyl alcohol: xylol), 52-48%; viscosity (Gardner), V-Z. Mineral thinner tolerance: 7 c.c. minimum per 10 g. solution. Iso-octane tolerance: 6 c.c. minimum per 10 g. solution. Acid number (solids): 6-9. Appearance: colorless, clear. Performance characteristics: Excellent gloss and gloss retention, color and color retention, stability, resistance to water, baking speed, Good hardness, adhesion. Use: in varied baking coatings, ranging from white enamels for washing machines and kitchen cabinets to resistant coatings for industrial equipment. Available in commercial quantities. Rohm and Haas Co.

### UFORMITE F-223

An urea-formaldehyde coating resin with high compatibility for long oil and highly polymerized alkyds. Solids, 48-52%; solvent (6:4 butanol: xylol), 52-48%; viscosity (Gardner), K-P; Acid number (solids), 4.7. Appearance: colorless and clear. Mineral thinner tolerance: 30 c.c. minimum per 10 g. of solution. Iso-octane tolerance:

20 c.c. minimum per 10 g. of solution. Weight per gallon: 8.5 pounds. Performance characteristics (in white enamels)—Excellent stability, gloss, adhesion, resistance to water, compatibility with weak solvents. Good speed of cure, resistance to alkali. Uses: Baking primers and enamels for automotive applications. All types of industrial baking enamels such as those used for dipping, roller coating and spraying on metal office furniture, industrial equipment, washing machines and kitchen cabinets. Available in commercial quantities. Rohm and Haas Co.

### UFORMITE M-311

An alkyl-modified triazine coating resin for high quality white baking enamels for washing machines, refrigerators, stoves, and kitchen cabinets. Solids, 50%; xylol, 50%. Amine resin solids, 60%. Non-drying alkyl solids, 40%; Viscosity (Gardner), Q-T. Mineral thinner tolerance: 5 c.c. per 10 g. solution. Iso-octane tolerance: 5 c.c. minimum per 10 g. solution. Color (Gardner), 3 max; Acid number (solids), 4.7; Weight per gallon, 7.8 pounds. Performance characteristics: Excellent gloss and gloss retention, resistance to humidity and hot water, color retention, curing speed, resistance to soap and alkali, film uniformity. Good adhesion and enamel stability. Available in commercial quantities. Rohm and Haas Co.

### UFORMITE MM-46

A melamine-formaldehyde coating resin for use in automotive baking enamels and in fast baking formulations employing high phthalic alkyds. Solids content is 60%, xylol and butanol each 20%. Viscosity (Gardner), I-L. Mineral thinner and iso-octane tolerance: 50 c.c. minimum per 10 g. of solution. Appearance: colorless and clear. Acid number (solids): 2 maximum. Weight per gallon: 8.3 pounds. Performance characteristics: Excellent compatibility with short and medium oil alkyds, gloss and gloss retention, color and color retention. Good tolerance for weak solvents, durability, resistance to soap and alkali, adhesion, enamel stability. Cures rapidly. Available in commercial quantities. Rohm and Haas Co.

### UFORMITE QR-336

A triazine type thermosetting coating resin supplied as 100% solids. Appearance: transparent to translucent chunks. Melting point: 58-63 C; Viscosity (60% solids in 1:1 xylol-butanol), U. Soluble in a variety of materials, including aromatic hydrocarbons, ketones, esters and ester plasticizers. Uses: in many applications where standard nitrogenous resins will not serve. Also in more conventional applications such as alkyl type baking enamels. Available in pilot-plant quantities. Rohm and Haas Co.

### VICTAWET 35BPI

An amber colored syrupy liquid blend of phosphorus-containing non-ionic and anionic surfactants. Forms clear solutions in water. Suggested uses: Wetting agent and emulsifier, where clear solutions are desired. Availability: semi-commercial quantities. Victor Chemical Works.

### WAX, 240, 280, 285, AND 290

A series of fatty amide, synthetic waxes made from stearic acid (and modified forms of stearic acid) and ethylene diamine. All waxes named after their approximate melting point and degrees Fahrenheit. Example: 280 Wax—(N: N'-distearyl ethylene diamine) melting point, 280-290 F.; acid value, 10 maximum; flash, 545 F.; fire, 580 F.; color, tannish white; form, bead; dielectric strength, 400 V/Mil. Use, anti-blocking, waterproofing, electrical insulating, and mold release agents. Used in other wax blends and asphalt compounds and for pipe wrap asphalts and electrical potting and dipping wax blends, to increase softening point, inhibit cold flow properties, and simultaneously either increase or decrease viscosity, depending on wax used. A special interest in 240 Wax as mutual solvent for polyamide resin and paraffin wax for heat sealing wax papers. Stops breaching of wax paper and assists heat sealing and anti-blocking properties. Carlisle Chemical Works, Inc.

### ZEOLEX 20

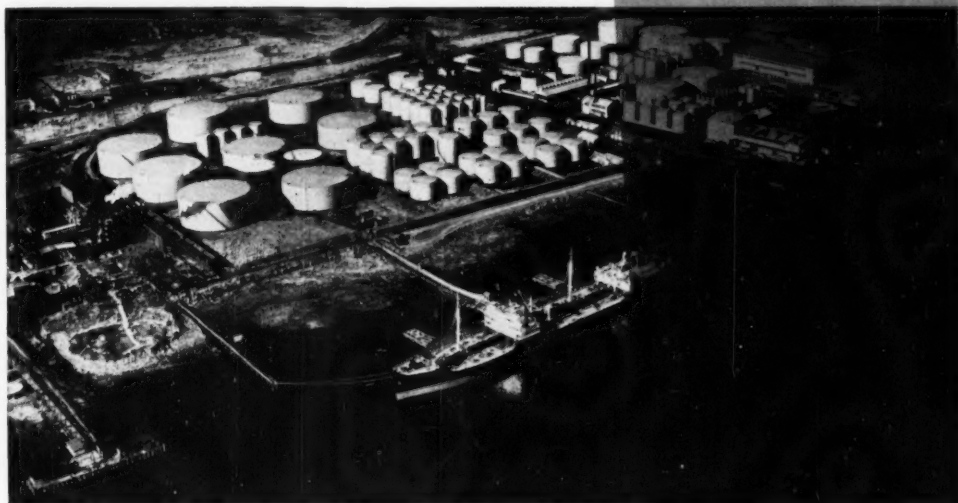
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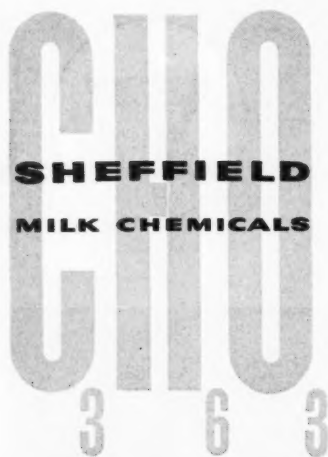
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	Aluminum 19 Parts	7
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	Zinc 44 Parts	7
	Cobalt 95 Parts	10
<b>GLUCONIC ACID</b> Sequestering action of 100 parts of acid	Iron (Ferric) 24 Parts	7
	Aluminum 4 Parts	7
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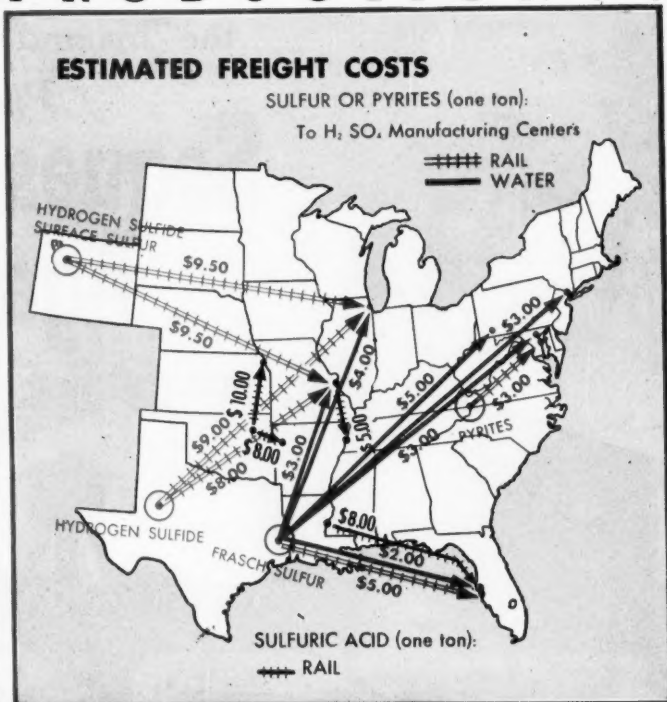
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## PRODUCTION . . .



## What Price Sulfuric?

MRI's Wessel and Holmes have just concluded a study on costs of making sulfuric acid from various sulfur sources.

On the basis of a reasonable return on investment, they predict an acid selling price, f.o.b. production point; they also consider the effect of freight rates.

Here is what they found, as told to **CHEMICAL WEEK** in an exclusive interview last week:

You have a choice on the market picture for sulfur this week. Either it's short or it isn't short, depending whether the government, in the person of NPA or DPA, or industry, in the person of Freeport Sulphur,\* is talking. But while the two are at loggerheads on the exact relationship between supply and demand, there is widespread agreement that the situation has perked up considerably in the last few months.

Actually, of course, the whole question is strictly an economic one. There's enough sulfur for the foreseeable future to make everyone happy. The problem: Is there enough at the right price?

\*As number two U.S. producer of sulfur, Freeport accounts for roughly 25% of the country's supply. It holds the shortage is "virtually over," the outlook "extremely encouraging." Texas Gulf Sulphur, number one producer, remains noncommittal on the subject.

Last week, for an inside look at what portends for sulfur and sulfuric acid, CW called on the Midwest Research Institute in Kansas City (Mo.), interviewed H. E. Wessel, senior chemical engineer, and E. O. Holmes, former associate chemist now director of the Kansas City Testing Lab. The two have just concluded an economic study of sulfur, particularly on the costs of making sulfuric acid.

In the next ten years or less, Wessel and Holmes point out, four major sources aside from brimstone loom for sulfuric acid: marginal (i.e. by present price standards) native sulfur, natural or refinery gases, smelter gases and pyrites. To evaluate their relative importance, Wessel and Holmes have worked up an estimate of the costs for making sulfuric acid from each source. And on the basis of a reason-



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## PRODUCTION . . . . .



WESSEL AND HOLMES: Aside from brimstone, four major sources loom.

able return on the investment in fixed and working capital, they predict an acid selling price, f.o.b. production point. In addition, they have taken into account the part played by freight rates in the overall picture.

**Three for One:** For a sulfuric-from-sulfur plant making 200 tons\* a day, and with sulfur charged at \$23 a ton at the plant, Wessel and Holmes figure manufacturing costs will run about \$13.40 a ton. Assuming a 5% overhead for selling and administration and a 60% income tax rate, acid selling for \$20 a ton would yield a return of 10-11% on the required total investment of \$1.45 million.

Currently some sulfur is selling for as little as \$18 a ton on long-term contracts; correspondingly, some acid is going for less than \$20 a ton. But both will rise when the long-term contracts expire. Freeport Sulphur indicates an average selling price (for 1951) of a \$21-22 a ton, f.o.b. mine. In any case, it's evident that a price rise of \$3 a ton for sulfur will boost the acid price by about \$1 a ton.

It's possible to work Frasch-minable deposits at a faster rate but that means higher operating and capital expenses, a higher cost product. On the other hand, a higher price for sulfur would be a big incentive to the industry. It would bring out more sulfur, stimulate the search for new Frasch sources. And the price could go up to \$30 a ton without placing the acid price over \$25 a ton. But whether the move

would uncover any large reserves is a moot question.

**Competitive but Limited:** One estimate gives the cost of winning sulfur from natural gas at \$16.40 a ton for a 15 ton-a-day plant. Although there are no figures on the size for an average plant, few would run over 50 tons a day because of the limited availability of gas.

With the preliminary scrubbing

### From Sulfur

Cost per Ton of Acid	
<b>Sulfur, 688 lbs., \$20 per</b>	
<b>ton plus \$3 freight</b>	<b>\$7.0</b>
<b>Water, cooling and process</b>	<b>0.4</b>
<b>Power</b>	<b>0.4</b>
<b>Labor</b>	<b>1.3</b>
<b>Maintenance</b>	<b>1.9</b>
<b>Depreciation</b>	<b>1.9</b>
<b>Insurance</b>	<b>0.5</b>
<b>Total manufacturing cost</b>	<b>\$13.4</b>

**Basis: 200 tons of 100% acid a day**  
**Fixed capital: \$1.25 million; working capital: \$0.2 million**

operation for hydrogen sulfide charged against the natural gas production cost,\* the \$16.40 value corresponds to a 2.67 year payout. Freight rates to the acid production areas of St. Louis and Chicago would run about \$8-9 a ton, placing the cost of sulfur laid down at the plant at \$24-25 a ton—competitive with \$20 Frasch sulfur, f.o.b. mine.

\* It's usually necessary even without sulfur recovery to reduce pipeline corrosion and to meet product specifications.

\* Short tons in keeping with industry practice. Sulfur figures are in long tons.

Producing sulfur from natural gas has proved to be an attractive venture for the gas processors and a significant increase in production is due this year when more plants go on stream. The big drawback is that production from that source is limited by the supplies of natural gas.

Petroleum, too, is rich in sulfur but under present practices up to half of it may leave refinery stacks as waste hydrogen sulfide. Crude oil consumed annually in this country contains an estimated 2.6 million tons, so that potentially over a million tons could be extracted.

Since the sulfur content of the crude varies widely, it's impossible to put a figure on the cost of sulfur from petroleum. But because acid can be made directly from hydrogen sulfide, the source is an important one to the refiners who are big customers for sulfuric acid. That's particularly true on the West Coast where crudes run high in sulfur.

**Potentially Biggest:** North American smelters are potentially capable of supplying up to three-quarters of the country's sulfur needs. Unfortunately, most of the roasters now in operation produce a gas low in sulfur dioxide concentration (1-3%). And though one contact plant is reportedly operating on a gas that runs 3.5%, the consensus is that, for efficient operation, 7-8% is the minimum.

Moreover, the acid must be produced at the smelter site. And since smelters are usually located in remote

### From Smelter Gas

#### Cost per Ton of Acid

Gas	no charge
Labor	\$1.3
Power	0.3
Maintenance	2.6
Depreciation	2.6
Insurance and taxes	0.6
<b>Total manufacturing cost</b>	<b>\$7.4</b>

**Basis:** 200 tons of 100% acid a day  
**Fixed capital:** \$1.9 million; **working capital:** \$0.2 million

areas, freight costs wipe out some of the advantages of cheap sulfur dioxide.

One smelter gets around that to some extent by absorbing sulfur dioxide from a dilute gas stream much the same way hydrogen sulfide is stripped from natural gas—but with a different solvent. Upon regeneration of the solvent, liquid sulfur dioxide is recovered. Another smelter roasts ores with oxygen, turns out a sulfur dioxide that can be liquefied directly.

This is the thinking behind the pro-

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## PRODUCTION . . . . .

duction of liquid sulfur dioxide: Since it contains about 50% sulfur (compared with 30% for 66° Be sulfuric), shipping it as liquid means a freight saving. But even that it partially offset by the need for pressure tank cars.

Wessel and Holmes have developed a cost estimate for making sulfuric acid from "high-test" sulfur dioxide using a Dorr FluoSolids roaster or a multiple hearth roaster. For a 200 ton-a-day plant, the total investment would be about \$2.1 million; cost per ton of acid, about \$7.40. If the smelter is located in the Idaho-Montana area, the acid could be sold for \$14 a ton to compete with \$20 a ton acid closer to the consumer. With considerations similar to those for an acid-from-sulfur plant, the return on investment could run as low as 8%.

One possibility for manufacturers of triple superphosphate would be to combine Western phosphate with acid from the smelter. By shipping the product to consuming areas as highly concentrated triple super, over-all freight charges might be pared. In any event, before the smelter operator becomes interested in making by-product acid, the extra investment in a tonnage oxygen plant or other facility would have to be justified by advantages in the ore roasting.

### From 35% Sulfur Pyrites

#### Cost per Ton of Acid

Pyrites price on contained sulfur basis:		
	\$0.0	\$20
	per ton	per ton
<b>Sulfur</b>	<b>\$0.0</b>	<b>\$7.0</b>
<b>Power</b>	<b>0.6</b>	<b>0.6</b>
<b>Labor</b>	<b>2.0</b>	<b>2.0</b>
<b>Maintenance</b>	<b>3.3</b>	<b>3.3</b>
<b>Depreciation</b>	<b>3.3</b>	<b>3.3</b>

<b>Insurance and taxes</b>	<b>0.8</b>	<b>0.8</b>
<b>Total manufacturing cost</b>	<b>\$10.0</b>	<b>\$17.0</b>

Basis: 200 tons of 100% acid a day  
Fixed capital: \$2.4 million; working capital: \$0.2 million

**Long and Short Range:** For the long range, pyrites—long the primary source of sulfur in foreign countries—may well become the primary source in this country. Known deposits have been estimated by the Bureau of Mines at 76 million tons of sulfur equivalent.

For the short range, it is possible that the price of sulfur could climb to \$30 a ton before pyrites become competitive. On the other hand, Dorr Co. already has contracts for 19 roasters to make acid from pyrites, and four of them are in this country.



Dorr expects the cost of acid from pyrites to be higher than that for elemental sulfur but gives no figure for the charges for sulfur in the pyrites which the acid production must assume. Under conditions comparable to those for plants working on smelter gas and elemental sulfur, if the pyrites are charged at \$20 a ton, Wessel and Holmes figure a return on investment of only 2% for acid selling at \$20 a ton, f.o.b. production point. For \$25 acid, the return is about 7%. With the sulfur in the pyrites charged at no value, the return on \$20 acid is approximately 10%.

**Looking to Supplies:** What it boils down to, say Wessel and Holmes, is that the upward trend for all forms of sulfur will boost the contract price for acid to \$22-\$25 a ton within the next few years. Many customers can absorb the price increase without much trouble. But the impact on fertilizer producers will be bigger. And small manufacturers who use non-captive acid will have to plot their future with that in mind.

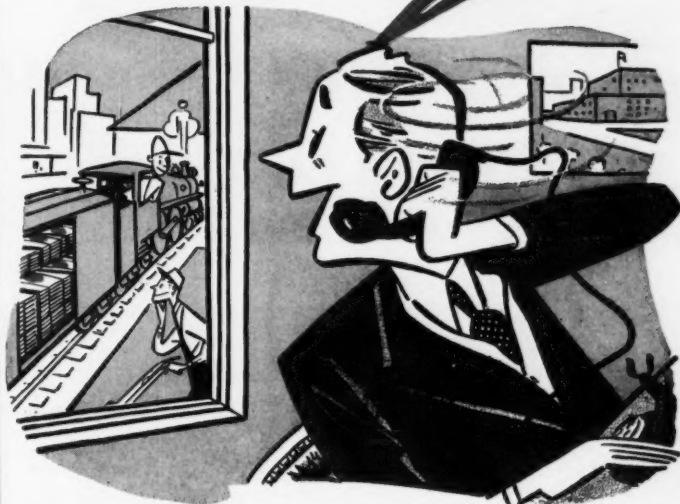
## EQUIPMENT . . . .

**Relief Valves:** Mc Donnell & Miller, Inc. (Chicago) is introducing a line of temperature and relief valves. Big feature, says the manufacturer, is a saving in initial cost and installation time. The new valves are automatic-reseating and are Btu-rated for proper selection.

**Gear Motor:** General Electric (Schenectady, N.Y.) has brought out a new gear motor said to simplify maintenance in case of electric failure of the stator. It's built in three pieces, thus making it possible to remove defective stators without disturbing gear components or gear connections to the load. G.E. figures the new motor gives extra protection against operating wear and tear, physical damage and electrical breakdown. It's being marketed in speed ratings from 780 to 13.5 rpms.

**Faster Grinding:** A one-year test on its new grinding media (Super Porcelain Balls and Brick) indicates the possibility of better grinding in less time, reports McDanel Refractory Porcelain Co. (Beaver Falls, Pa.). For the test, McDanel lined half the mill with its regular line of porcelain brick, half with the new material; used its new grinding balls. After 205 charges (involving over 2,700 hours of operation and almost 5 million revolutions), the lining was removed. Examination showed a substantial improvement in durability for the new material.

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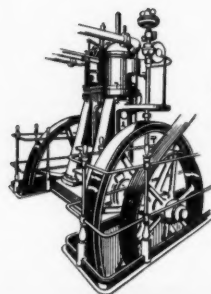


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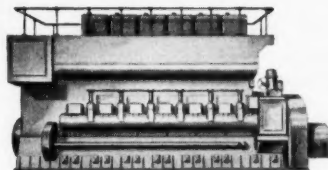


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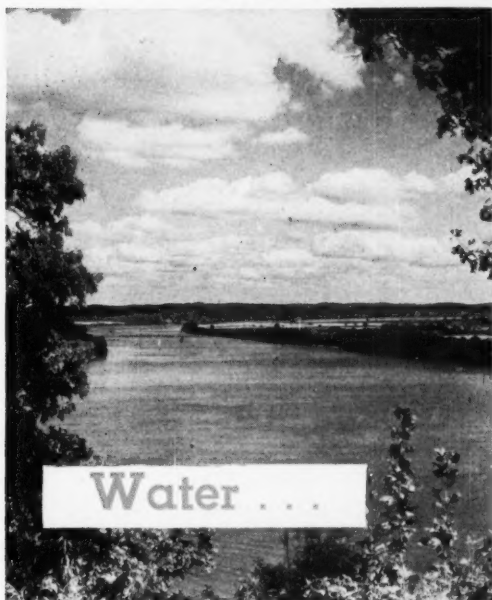
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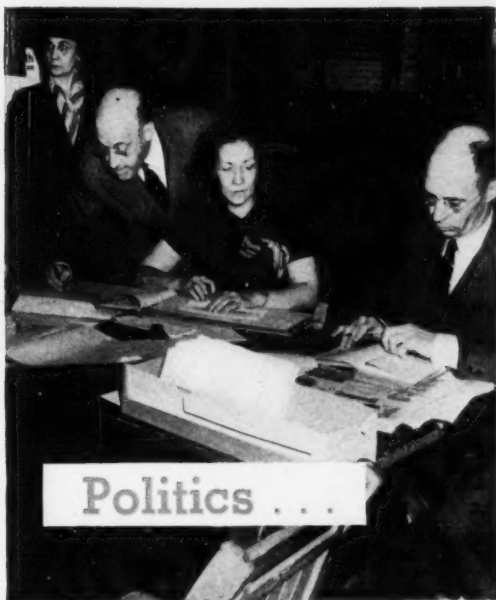
HP 130

# DISTRIBUTION . . . . .



## Water . . .

Enough for processing or cooling? What's the analysis?



## Politics . . .

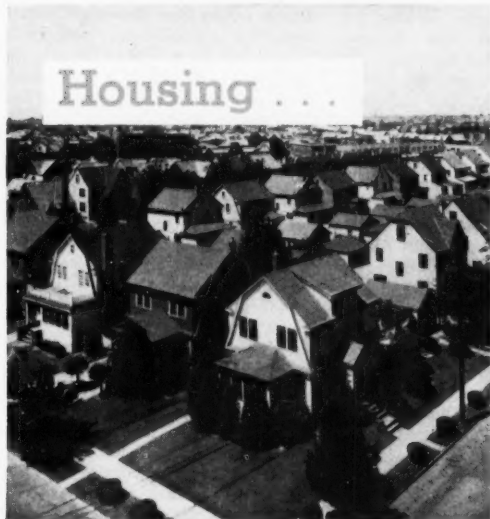
How is the local government? What's the outlook on taxes?

## Information Rounds Up Revenue

Last week, in a harried mood brought on by a tough decision on the selection of a multi-million-dollar-plant site, the chemical director of a large Eastern company blurted, "They're a pain in the neck!" But on the other side of the continent, another chemical execu-

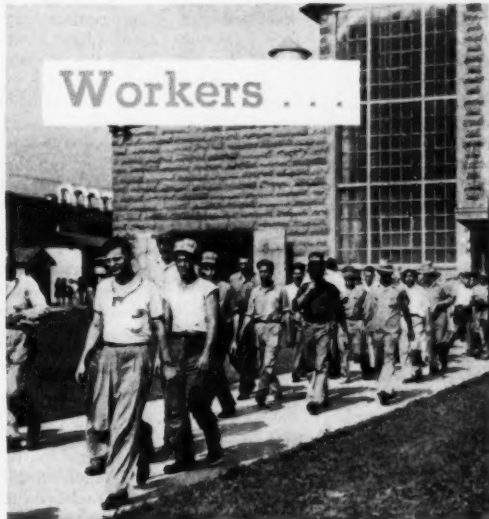
tive had nothing but praise: "They're the final word for facts and figures about this area." The subject of both comments: the railroad industrial agents, whose job it is to attract industry to sites along their respective tracks.

Because these agents act as midwives at the birth of so many chemical installations, and because the locations of these plants have such a direct effect on the chemical distribution pattern, thereby affecting the industry's future, CW talked to agents in all parts



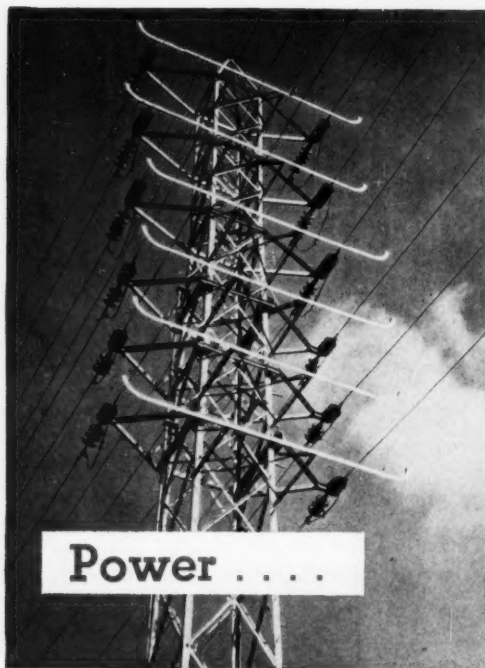
## Housing . . .

Are new homes needed? Or are neighbors too close?



## Workers . . .

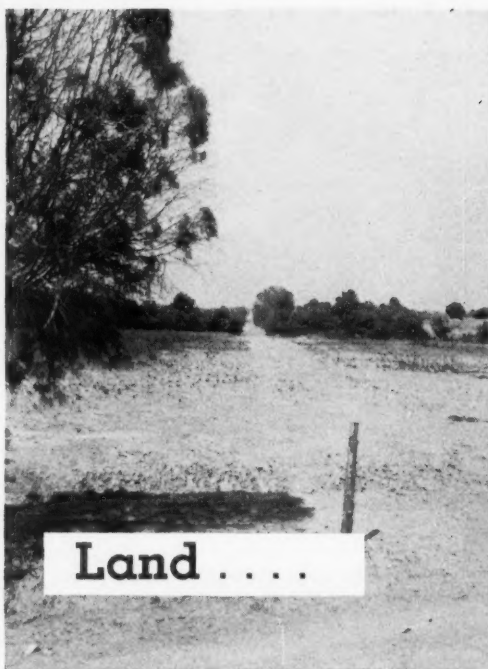
Enough skilled help nearby? How about unions and wages?



Power . . . .

EWING GALLOWAY

Are the rates high? Does it come from water power or coal?



Land . . . .

How much, where, and what kind? Floods or earthquakes?

## . . . Rounding Up Revenue

of the U.S. to determine what kind of a job they are doing.

The survey indicates that railroad agents, as a group, are an eager, knowledgeable, and aggressive fraternity. Also as a group, they are eagerly eyeing the continuing chemical construction boom. They are especially anxious to bring chemical process plants into their areas because, as one agent puts it: "Your industry is practically depression-proof, is basic to all other industries, keeps ahead by constant research, and is noted for having the best all-around management."

This attitude is reflected in the efforts which the omnipresent Pace brothers, Anderson and Walter, of the Illinois Central, have put into building up the Paducah-Calvert City area of Kentucky as a "chemical center." It can also be assumed that the growing importance of Memphis, Tenn., as a hub of chemical commerce (CW, August 30) can be credited to the smooth salesmanship of these two men.

The Pace brothers don't believe in the shotgun techniques of direct-mail brochures and national advertising, prefer to operate on a top-level personal basis. But other successful industrial agents make no efforts to pull

their punches. "We'll do anything short of murder for the prospect," says one, "in order to get the revenue which he will be able to offer."

**No Stones Unturned:** The agent's job is essentially to (1) search out and contact companies looking for new plant locations, and (2) convince the prospect that no spot in the country is quite as advantageous as the ones available along the railroad's trackage.

The first task is common to all types of selling, but the second one calls for a complex approach. The railroads cannot simply extol their own assets—instead, they must sell the prospective builder on the "personality" of an entire region, state, county, town, or village. This personality is the sum of a bewildering number of facets which must be searched out and presented to the prospect in the best possible light.

These go well beyond the normal curiosity as to raw material sources and available markets. The individual companies can usually figure out these for themselves. Rather, there seems to be no limit on the number of different factors which a prospect will want to take into consideration in making his decision. In spite of the fact that the

industrial agent is a central clearing house for information from chambers of commerce, power companies, government agencies, *et al.*, on-the-spot legwork is the daily routine.

One large chemical company, for instance, was evaluating a location in Oregon, had the Southern Pacific Railroad check up on such diverse items as sample menus from downtown restaurants, type of jewelry and clothing sold in local stores, per cent of aliens in the population, and whether the average home owner cut his own grass or had the gardener do it.

**Basic Facts:** But most of the time, the industrial agent is dishing out a steady stream of basic information about his line's territory. These data fall into a set pattern, answer most of the prospects critical problems. The pictures on these pages illustrate the questions most often asked by chemical executives.

Not all railroads feel that they can afford a fully integrated industrial agency; but, small or large, each agent's office is a treasure-trove of information. On the basis that a well-informed decision is usually the best one possible, the chemical industry can be thankful that, during its present expansion boom, it can take full advantage of the agents' wide knowledge.





Dependable Source For Chemical Raw Materials



## "Wyandotte Kreelon has good sudsing characteristics and solubility"

—says L. Carlton Mertz, Chicago, Illinois

### BULLETIN BOARD

#### Dicol®:

This mixture of diglycols, predominantly diethylene glycol, has shown outstanding efficiency in plasticizing and humectant applications . . . plus up to 20% savings! Write for samples, data.

#### Caustic Soda:

Some cleaning compound manufacturers are finding that powdered caustic has some advantages over flake. Since other ingredients are powdered or fine-granular, a dust-suppressing oil is needed anyway; and the powdered caustic does not tend to segregate. Ask for trial quantity.

#### Carbose®:

Raw-material cost reductions of up to 50% have resulted from the use of this Na CMC, according to field reports. In tests, as little as 1% Carbose has increased soil removal and whiteness retention as much as 10-40% in various formulations. Ask for samples.

"We've been in the cleaning compound business for more than 21 years," says Mr. Mertz, owner of L. Carlton Mertz Company, Chicago.

"Today, we make more than 100 products for dairy cleaning, metal fabricating and processing, and general maintenance work.

"To maintain our quality and keep pace with the industry, we make a constant check on all of our sources of supply.

"We find new, improved WYANDOTTE KREELON has good sudsing characteristics and rapid solubility—is very satisfactory for our purposes. We use it in a number of our quality detergents."

Have you tried our improved WYANDOTTE KREELON®? Its characteristics may be helpful to your products, speed your process, or cut your over-all cleaning costs. Send for a FREE sample, and a copy of our new 28-page book. It contains complete data. Wyandotte Chemicals Corporation, Wyandotte, Michigan. Offices in Principal Cities.

REG. U.S. PAT. OFF.



**Wyandotte**  
**CHEMICALS**

HEADQUARTERS FOR ALKALIES

# Sulphur

*Thousands of tons  
mined daily,  
but where does it all go?*

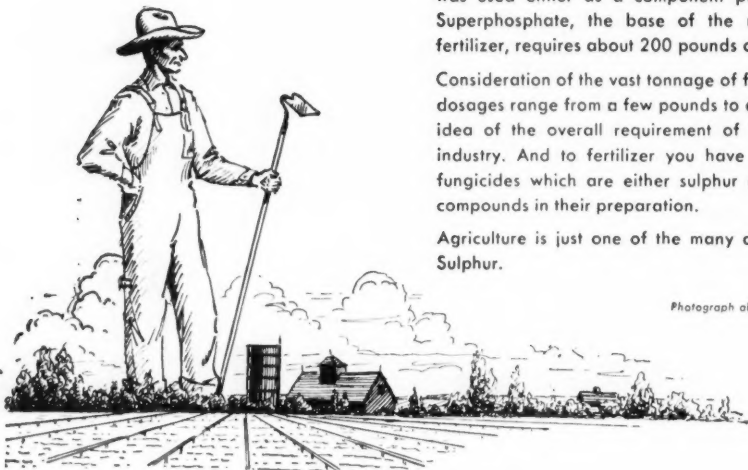


**T**HE DEPARTMENT OF AGRICULTURE reports that in 1950 some 336,000,000 acres of land in the United States were under crop cultivation. That's a lot of acreage.

But where, you might ask, is the connection with Sulphur? Fertilizer, to take just one phase of agriculturally-used chemicals in which Sulphur was used either as a component part or as a processing element! Superphosphate, the base of the most widely used manufactured fertilizer, requires about 200 pounds of Sulphur for every ton produced.

Consideration of the vast tonnage of fertilizer used in agriculture — and dosages range from a few pounds to a ton or more per acre — gives an idea of the overall requirement of Sulphur for this one division of industry. And to fertilizer you have to add all the insecticides and fungicides which are either sulphur derivatives or have used sulphur compounds in their preparation.

Agriculture is just one of the many destinations of great tonnages of Sulphur.



*Photograph above shows our loading dock at Galveston, Texas*

**Texas Gulf Sulphur Co.**

75 East 45th Street, New York 17, N. Y.



Mines: Newgulf and Moss Bluff, Texas

# RESEARCH . . . . .



## Atomic Attack on Insects

Sanibel Island, off Florida's west coast, boasts something new in insect life this summer—atomic mosquitoes, a million and a half of them. They're part of an experiment staged by the Florida State Board of Health to find out how far (and how fast) a salt-marsh mosquito will travel from his hatching-puddle.

The mosquitoes are hatched from eggs in a specially prepared and carefully tended bed in a drainage ditch (top). During their larval stage, the insects acquire an atomic label from radioactive phosphorus added to the water. Later, a check of insect traps (lower left) in the surrounding coun-

try turns up mature members of the labeled tribe, easily identified with a Geiger counter.

Points of capture are spotted on map (lower right) of the area by biologists Maurice Provost (at left, sitting), director of the project, and R. Shepperd. Provost is confident that the experiment "will add considerably . . . to knowledge of the mosquito's travel habits, life-span and [reveal] other significant information to improve our mosquito control program."

Latest results show that Sanibel Island mosquitoes can travel at least 25 miles from their birthplace in search of food and mates.

## STATISTICAL QUALITY CONTROL

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RESEARCH . . . . .

## Keeping Them Happy

Provision for the less tangible needs of the researcher is now the rule in research personnel administration.

Here's a rundown of current salary, promotion, education and professional recognition policies in the industry.

Despite the popular image of the white-coated, clear-eyed miracle maker, the lot of the industrial researcher could hardly be called "exalted." He's a respected member of the commercial organization, but rarely a privileged character. In general, he finds himself governed by the same basic personnel policies that apply to his less scientific colleagues. But individualized embellishments on basic policy prove conclusively that companies are not unaware of the scientist's special needs, do indeed make an honest effort to keep their researchers—and keep them happy.

Here's a bird's-eye view of what is going on in research personnel administration:

Salary, as might be expected, still is the paramount requisite to professional contentment and perhaps the best measure of achievement. Moreover, salary policies almost universally reflect three major management aims: to compensate the individual for value to the firm; to keep individual salaries on a par with those paid to comparable personnel in other firms; and to permit periodic increases.

Of course these are, at best, guiding principles. How they are brought into play varies considerably from company to company. One rather widespread method of arriving at salary increases is based on a performance rating assigned to each technical staffer by his supervisor. Total money available to the research and development division for the fiscal period is then prorated in accordance with individual classifications.

Another system currently in use in the chemical industry augments job evaluation with consideration of the prevailing salary scale in the area. In practice, the technique works something like this: Supervisory personnel, department and division chiefs, etc., prepare a description of each job and its relative importance in the research structure. All jobs are then grouped into specific position levels.

**Eye on the Map:** These levels next are assigned a salary range with an eye to the existing rate of compensation for similar positions in the area. Finally, the individual researcher's position is pin-pointed within the appropriate range to provide an exact dollar figure.

Within this framework, general increases are granted, where indicated, to keep the salary scale competitive. Improved performance, however, is rewarded by merit increases which usually are provided for in the research division budget.

In the main, research salaries are still tied pretty closely to sales. But a growing recognition of the importance of consistent and uninterrupted research, even when business is poor, is prompting some notable innovations in conventional research budget policy. One industrial organization, for example, no longer lays off research and engineering personnel when sales are particularly poor. Instead, it correlates salaries to operating conditions. When production schedules are extremely short, salaries dip; and by the same token, salaries automatically receive a proportional boost in times of above-average and near-capacity output.

Although salary schemes may differ considerably, a just-published report by National Industrial Conference Board points up a pertinent (in these days of technical manpower shortages) and generally accepted practice: Increases for the sole purpose of meeting offers from other firms are nearly always denied.

**Intangibles:** Over and above financial compensation, most industrial organizations today realize, and provide for, the less tangible requirements of their scientific staffers. Attendance at professional society meetings is not the least of these. Time off to attend meetings in the area is common practice. And the majority of large firms generally have several technical representatives at major meetings in distant cities and even, in some cases, foreign countries.

Publication of research papers is encouraged by chemical companies almost without exception, as is advanced professional study. Several firms now provide a refund of all or part of tuition for courses at colleges and universities taken by research personnel.

**Policy-Making:** A growing tendency to utilize scientific personnel in top-management positions is now being supplemented by increased participation of research people in policy-making functions. In evidence of this



# Tried a monoglyceride that's 90% MONOESTER?

Ordinary commercial monoglycerides generally contain less than 50% of monoesters, along with relatively inactive diglycerides, triglycerides, glycerine, fatty acids, and soap. But DPi's distillation methods concentrate the desirable monoester to as much as 90%.

"Monos" act as bridges between oil (or other water-immiscible materials) and water, lowering interfacial tension in proportion to their true monoester content. Their properties as interface modifiers can be varied to match specific needs.

These facts make them useful as components in such products as cosmetic creams, lotions, ointments, lipsticks, lubricants, insecticidal sprays, natural and synthetic resins and waxes, and innumerable other chemical specialties.

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Send for test samples or, better still, let's arrange to discuss your specific qualitative and quantitative needs for monoglycerides.

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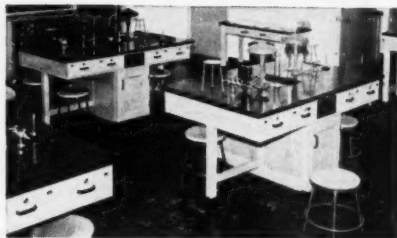
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from the laboratories of DISTILLATION PRODUCTS industries													
<p>Average Chemical and Physical Data:</p> <table> <tr> <td>Monoester Content</td><td>90.0% (minimum)</td></tr> <tr> <td>Saponification Value</td><td>150-160</td></tr> <tr> <td>Iodine Value</td><td>80-90</td></tr> <tr> <td>Glycerol Content</td><td>1.0% (maximum)</td></tr> <tr> <td>F.F.A. (as oleic)</td><td>1.5% (maximum)</td></tr> <tr> <td>Specific Gravity</td><td>0.96 @ 60°C</td></tr> </table>		Monoester Content	90.0% (minimum)	Saponification Value	150-160	Iodine Value	80-90	Glycerol Content	1.0% (maximum)	F.F.A. (as oleic)	1.5% (maximum)	Specific Gravity	0.96 @ 60°C
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Specific Gravity	0.96 @ 60°C												
<p>General Comment:</p> <p>Distilled Monoglycerides Type 18-85, an unusually rich concentrate of monoester, is prepared from cottonseed oil and chemically pure glycerine. The product is bland, free of catalyst or soap, designed specifically for addition to various products.</p>													
DATA SHEET	Subject: Distilled Monoglycerides Type 18-00												
from the laboratories of DISTILLATION PRODUCTS industries													
<p>Average Chemical and Physical Data:</p> <table> <tr> <td>Monoester Content</td><td>90.0% (minimum)</td></tr> <tr> <td>Saponification Value</td><td>160-170</td></tr> <tr> <td>Iodine Value</td><td>3 (maximum)</td></tr> <tr> <td>Glycerol Content</td><td>1.0% (maximum)</td></tr> <tr> <td>F.F.A. (as stearic)</td><td>1.5% (maximum)</td></tr> <tr> <td>Specific Gravity</td><td>0.96 @ 75°C</td></tr> </table>		Monoester Content	90.0% (minimum)	Saponification Value	160-170	Iodine Value	3 (maximum)	Glycerol Content	1.0% (maximum)	F.F.A. (as stearic)	1.5% (maximum)	Specific Gravity	0.96 @ 75°C
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Specific Gravity	0.96 @ 75°C												
<p>General Comment:</p> <p>Distilled Monoglycerides Type 18-00 is prepared from edible, full hydrogenated lard and chemically pure glycerine. In addition to very high monoester content the product is characterized by blandness, good stability and freedom from catalyst or soap. Its efficiency as an emulsifier is excellent.</p>													
DATA SHEET	Subject: Distilled Monoglycerides Type 18-05												
from the laboratories of DISTILLATION PRODUCTS industries													
<p>Average Chemical and Physical Data:</p> <table> <tr> <td>Monoester Content</td><td>90.0% (minimum)</td></tr> <tr> <td>Saponification Value</td><td>160-170</td></tr> <tr> <td>Iodine Value</td><td>3 (maximum)</td></tr> <tr> <td>Glycerol Content</td><td>2.0% (maximum)</td></tr> <tr> <td>F.F.A. Content</td><td>2.5% (maximum)</td></tr> <tr> <td>Specific Gravity</td><td>0.96 @ 75°C</td></tr> </table>		Monoester Content	90.0% (minimum)	Saponification Value	160-170	Iodine Value	3 (maximum)	Glycerol Content	2.0% (maximum)	F.F.A. Content	2.5% (maximum)	Specific Gravity	0.96 @ 75°C
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Glycerol Content	2.0% (maximum)												
F.F.A. Content	2.5% (maximum)												
Specific Gravity	0.96 @ 75°C												
<p>General Comment:</p> <p>Distilled Monoglycerides Type 18-05, a glyceryl monoesterate of exceptionally high monoester content, is designed particularly for the cosmetic, drug and allied industries. High-grade triple pressed stearic acid and chemically pure glycerine are materials used in its manufacture.</p>													
DATA SHEET	Subject: Distilled Monoglycerides Type 18-40												
from the laboratories of DISTILLATION PRODUCTS industries													
<p>Average Chemical and Physical Data:</p> <table> <tr> <td>Monoester Content</td><td>90.0% (minimum)</td></tr> <tr> <td>Saponification Number</td><td>160-170</td></tr> <tr> <td>Iodine Value</td><td>45-55</td></tr> <tr> <td>Glycerol Content</td><td>1.0% (maximum)</td></tr> <tr> <td>F.F.A. (as oleic)</td><td>1.5% (maximum)</td></tr> <tr> <td>Specific Gravity</td><td>0.96 @ 60°C</td></tr> </table>		Monoester Content	90.0% (minimum)	Saponification Number	160-170	Iodine Value	45-55	Glycerol Content	1.0% (maximum)	F.F.A. (as oleic)	1.5% (maximum)	Specific Gravity	0.96 @ 60°C
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Glycerol Content	1.0% (maximum)												
F.F.A. (as oleic)	1.5% (maximum)												
Specific Gravity	0.96 @ 60°C												
<p>General Comment:</p> <p>Distilled Monoglycerides Type 18-40 is prepared from prime rendered lard and chemically pure glycerine. In addition to very high monoester content the product is characterized by blandness, good stability and freedom from catalyst or soap.</p> <p>Distilled Monoglycerides Type 18-40 is packed and shipped in 100 and 250 pounds net.</p> <p>For test samples or more information, contact the office below.</p>													

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## RESEARCH . . . . .

trend, National Industrial Conference Board, Inc., reports:

"Frequently senior research men other than those directly connected with management are permitted to participate in company policy decisions. Membership on company-wide committees and reports to top management are two means of accomplishing this. One company, for example, has a committee consisting of representatives of all divisions and subsidiaries, which meets periodically . . . One or two men from the laboratory attend these meetings, and it is widely known that the committee's recommendations carry great weight with top management."

The wisdom of rewarding a top-notch research man with a desk job, of course, is open to question. The recognition of achievement consequently has become somewhat of a problem as applied to researchers. One prominent firm stands four-square behind the theory that a good scientist is happiest in the laboratory, believes generous compensation and challenging work is the answer. As of now, however, this opinion is conspicuous in an area where "let nature take its course" seems to be the rule.



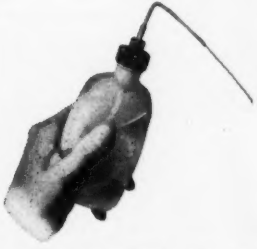




WIDE WORLD

## First for California

CHAUNCY STARR (left) and Don Howard, atomic technologists, measure radiation of North American Aviation, Inc.'s (Downey, Calif.) brand-new water-boiler type nuclear reactor. Built for research purposes, the new reactor is the first for California. Two-foot thick concrete blocks shield the tank-like housing in which the core is located. The engineers are members of the company's atomic energy research department.

# There's more to a "SQUEEZE" than you think

 <p>Squeezing this Plaxpak bottle forces sealing compound out of spout in narrow ribbon.</p>	 <p>when it's applied to a PLAXPAK bottle</p>
 <p>Squeeze of this Plaxpak wash bottle dispenses contents in controlled thin stream.</p>	
 <p>Squeeze of Plaxpak bottle saturates sponge for uniform, neat application of hair coloring.</p>	 <p>Tap water is demineralized quickly by this Plaxpak bottle combination.</p>

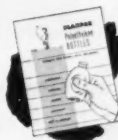
## THESE PLAXPAK

polyethylene bottles vary widely in application, but they all have one thing in common — a squeeze by the user dispenses the contents neatly, quickly and controllably.

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September 6, 1952 • Chemical Week



# Paint That Moves Traffic

## CHEMICAL PROBLEM...

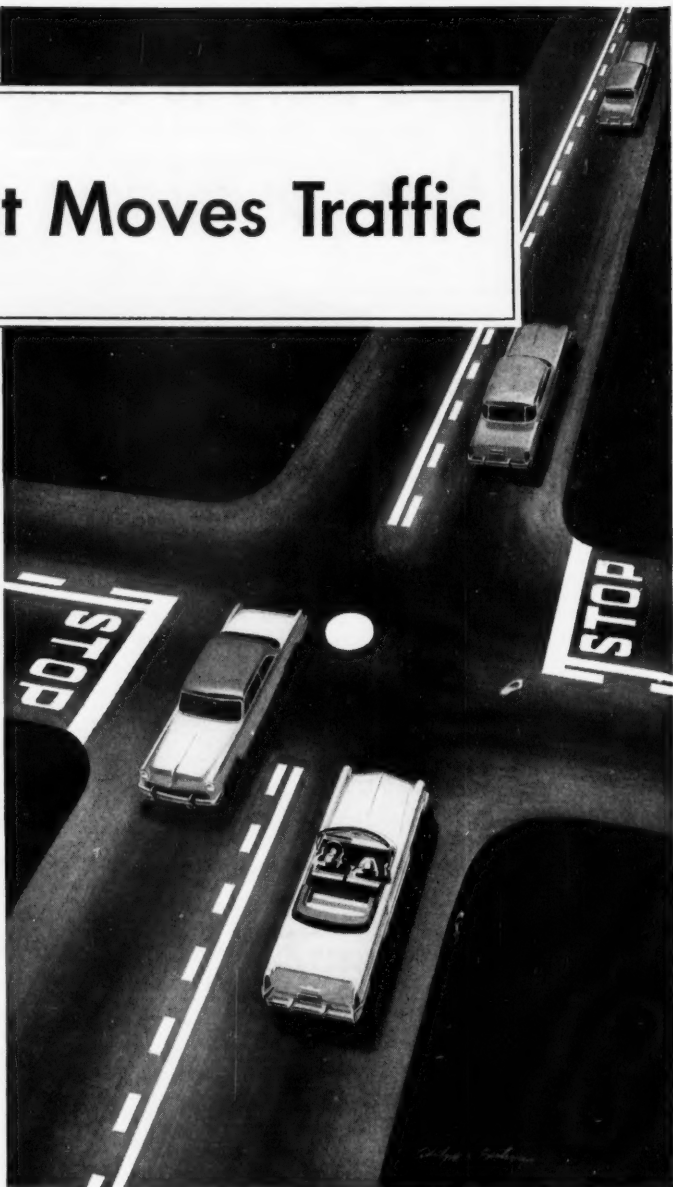
... to reduce traffic inconveniences caused by too frequent repainting of road markings.

## SOLUTION...

... new-type traffic paints made with Parlon® (Hercules chlorinated rubber) and Pentalyn® (a Hercules resin). These paints dry in minutes, yet have exceptionally long road life. Where glass beads or other materials are mixed in the paint for added reflectance, the Parlon-Pentalyn combination also acts as the binder.

## RESULT...

... highway maintenance departments report markings require repainting less frequently, which lowers costs and decreases traffic interruptions. The quick dry and durability of these traffic paints indicate why finishes made with Parlon are being used more and more to solve industrial maintenance problems—on all types of surfaces.



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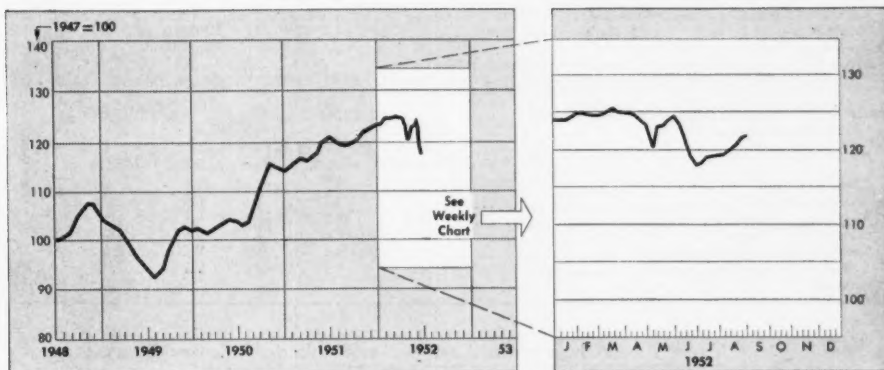
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# MARKETS . . . . .



CW Index of Chemical Output—Basis: Total Man Hours Worked in Selected Chemical Industries

## MARKET LETTER

"Dark, and getting darker," the label usually tagged onto cresylic acid held too long in inventory, is being used more and more to characterize the current cresylic market.

Imported (American Duty Free) material, especially, is feeling the needle of no demand. Importers point to some 25,000 gallons of German cresylic going a-begging at 70¢-72¢/gallon.

Some higher grade British acid is changing hands for about 80¢/gallon although the quasi-official price tag reads 85¢.

On the domestic front coal tar cresol producers' sentiments are unanimous—these tar acids are in the least short supply of all the aromatics. And petroleum acid isn't boiling along either, but prices are holding steady.

Most chemical process industries, however, are looking at the brighter side, hold high hopes for the immediate future. The Labor Day weekend usually puts a psychological period to traditional summer production interruptions, and many sales managers feel this year's holiday will also bring an end to "hand-to-mouth" inventory policies; chemicals consumers may break loose, increase buying.

The demand curves for nylon and cellophane are already pointing upward. Adiponitrile (a base for nylon) is pouring out at a record clip. The reason, of course, is increased demand for nylon.

Capacity output of cellophane is also in the offing at Du Pont's big Yerkes Works (Tonawanda, N.Y.). Production now running at about 87%, will be upped to 100%. Clear-cut implication: Cellophane consumers' inventories have been cut considerably.

And the gum market is firming up, too. Gum arabic was as high as 19¢/pound early this year, dropped to 14¢ recently, is now up to 15½¢ (Chicago). Price of gum tragacanth (No. 1 ribbon) is now pegged at about \$3.15/pound. It's a cinch, though, the Iranian situation will cause some price shifting.

Latest rubber consumption figures highlight the switch from natural to synthetic. Use of synthetic rubber in July amounted to 58,880 long tons, vs. natural rubbers' 32,500.

# MARKET LETTER

## WEEKLY BUSINESS INDICATORS

	Latest Week	Preceding Week	Year Ago
CHEMICAL WEEK Output Index (1947=100)	122.0	121.8	120.3
CHEMICAL WEEK Wholesale Price Index (1947=100)	102.4	102.4	107.0
Bituminous Coal Production (daily average, 1,000 tons)	1,600.0 <sup>a</sup>	1,650.0	1,791.0
Steel Ingot Production (1,000 tons)	2,100.0 <sup>a</sup>	2,050.0	
Stock Price Index of 14 Chemical Companies (Standard & Poor's Corp.)	243.3	245.2	253.8
Chemical Process Industries Construction Awards (Eng. News-Record)	\$18,114,000	\$8,363,000	\$62,835,000

## MONTHLY INDICATORS—FOREIGN TRADE (Million Dollars)

	EXPORTS			IMPORTS		
	June Lastst Month	Preceding Month	Year Ago	June Lastst Month	Preceding Month	Year Ago
Chemicals, total	65.1	69.5	93.0	19.5	19.0	24.7
Coal tar products	3.8	3.7	7.4	0.5	0.5	0.9
Medicines and pharmaceuticals	20.1	18.3	27.4	4.3	4.4	4.2
Industrial chemicals	9.8	11.6	17.5	4.5	3.6	9.7
Fertilizer and fertilizer materials	2.5	3.8	3.9	9.5	9.8	8.7
Vegetable Oils and Fats, inedible	2.7	4.3	13.2	7.1	7.9	7.7

<sup>a</sup> estimated

There's been less natural rubber available to industry because of Government stockpiling, but here's a safe bet: There will be more—and soon. The reason: Original U.S. natural rubber stockpile objective was 1½ million long tons. Six months ago the goal was in sight. By this week the project could be ready for the "Mission Accomplished" stamp.

Latest edition (No. 8) of DPA's bimonthly "List of Basic Materials and Alternates" indicates the extent of the easing chemicals supply situation (CW, August 2). There are 59 changes. But note this: Every change is to a less "critical" Classification—or removed from the list entirely.

The key to the list: Group I, materials in short supply; Group II, commodities that are in approximate balance with defense and essential civilian demand; Group III lists materials in fair to good supply.

From Group I to Group II: butadiene, monochlorotrifluoroethylene, parachlorophenol, sulfuric acid.

From Group I to Group III: dihydroxydichlorodiphenylmethane, naphthalene, toluene.

From Group II to Group III: alkyd resins, benzene, carbon tetrachloride, chloroform, ethanolamines, ethylene dichloride, ethylene glycol, ethylene oxide, isopropyl alcohol, maleic anhydride, melamine, melamine resins, naphthenic acid, paradichlorobenzene, paranitrophenol, perchlorethylene, phenolic resins, phosphate plasticizers, phthalic anhydride, polyethylene, polyethylene resins, polyester resins, refined sebacic acid, trichlorethylene, xylene.

Removed from the list: acetic acid, amyl acetate, amyl alcohol, borax, boric acid, carbon black, formaldehyde, iodine, lead oxide (red), litharge, methyl chloride, naphtha, orthophosphoric acid, pentaerythritol, phenol, phosphorus, propionic acid, quinoline, resorcinol, rosin, shellac, sodium hydrosulphite, styrene, succinic acid, sulfur chloride, tall oil, turpentine.

In the Miscellaneous listing DPA shows graphite (natural and crucible flake) rare earths, rutile slipping to Group II. All rubber classifications formerly in Group II, however, are now in Group III.

And echoing recent industry reports, the agency for the first time takes both copper and aluminum out of the "short supply" category, drops them into Group II.

## SELECTED CHEMICAL MARKET PRICE CHANGES—Week Ending September 1, 1952

UP	Change		New Price	Change		New Price
Linseed Oil, tc, FOB Minneapolis	\$ .005	\$ .162	Tung Oil, tc, NY	.005	.3875	
Soybean Oil, crude, tanks, mills	.004	.119				

All prices per pound unless quantity is stated

Ask for our new price list effective August 1, 1952

# Wax

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## WARWICK WAXES

NAME OF WAX	MELTING POINT ASTM D-127-30	PENETRATION 100g./77°F./5 sec.	COLOR N P A	ACID NUMBER	SAPONIFICATION VALUE	TYPE
CARDIS* 314	184-189	4-6	4-5	13-15	45-50	EMULSIFIABLE PETROLEUM WAX
CARDIS* 319	180-185	5-7	4½-6	18-20	65-70	EMULSIFIABLE PETROLEUM WAX
CARDIS* 320	180-185	5-7	4-5	28-30	75-80	EMULSIFIABLE PETROLEUM WAX
CARDIS* 262	195-200	4-6	BROWN	14-16	40-45	SPECIALLY PROCESSED PETROLEUM WAX
FORTEK*	190-200	3-5	2½-3½	0.0	0.0	MICRO-CRYSTALLINE HARD AND PLASTIC
MEKON* B-20 A-20 Y-20	190-195 190-195 190-195	3-5 3-5 3-5	BROWN-BLACK AMBER-6 MAX. YELLOW-3-3½	0.0	0.0	MICRO-CRYSTALLINE HARD AND BRITTLE
WARCO WAX 180	180-185	4-7	WHITE	0.0	0.0	MICRO-CRYSTALLINE HARD AND BRITTLE
WARCO* WAX 150-A	145-155	15-20	YELLOW 1-2	0.0	0.0	MICRO-CRYSTALLINE PLASTIC
WARCOSINE	145-150	15-20	WHITE	0.0	0.0	MICRO-CRYSTALLINE PLASTIC
PARAFFIN	131-133	FULLY REFINED				CRYSTALLINE
SUGAR CANE WAX	174-178	13 WAX	TAN	23-28	65-77	VEGETABLE WAX

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## MARKETS . . . . .

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↓  
190,000,000 gallons  
105,000,000 gallons  
48,000,000 gallons  
343,000,000 gallons

↓  
Coke Oven and Drip Oils  
Petroleum  
Import Equivalent  
Total Available

### THIS MUCH WILL GO INTO

↓  
150,000,000 gallons  
70,000,000  
25,000,000  
21,000,000  
17,000,000  
15,000,000  
9,000,000  
42,000,000  
349,000,000

↓  
Styrene  
Phenol  
Nylon  
Aniline  
Synthetic Detergents  
Maleic Anhydride  
D D T  
Others\*  
Total

\*Includes Diphenyl, Di-monochlorobenzene, B H C, etc.

NEXT YEAR'S BENZENE: The figures pose the question . . .

## Is Benzene Really Short?

At times the National Production Authority and the chemical process industries don't see eye to eye regarding expansion goals, (e.g., penicillin, CW, July 26), but when the theme is benzene, both groups sing in harmony, "We want more." And there will be a good deal more benzene produced—and needed—if:

- Coke-oven benzene producers can maintain, or exceed, the current 185-190 million gallons-a-year pace.
- The petroleum industry completes construction of all its planned (and the Government's called-for) benzene production facilities.
- Estimated benzene requirements materialize; including, of course, continued booming of consumption by styrene and phenol.

Coal tar benzene capacity at the moment is estimated at about 180 million gallons a year. Though efforts have been made to increase output from this source, it is generally conceded by industry-wise people that production of coal-derived benzene will hit its ceiling, 190 million gallons/year, by 1953. This is nevertheless a whopping increase over the 135 million gallons which was estimated, as late as 1940, as the potential benzene from coal tar.

**The Picture Then:** At the time (prior to World War II) this supply was ample for all U.S. needs—and the price was relatively low.

But by 1949 there was an upheaval in the benzene market. By that year, too, nearly 170 million gallons of chemical-grade benzene was expected to be forthcoming. Then a series of circumstances literally forced the petroleum industry to pitch in and produce the material:

- The coal and steel strikes of 1949 resulted in a loss of some 40 million gallons.
- The skyrocketing plastics industry called for more and more phenol and polystyrene.
- Synthetic detergents began to grow by leaps and bounds.

All these demanded increased quantities of benzene. Dow, Monsanto, Du Pont—the largest consumers—scratched the world for supplies of benzene. By the following year (1950) an 85¢/gallon price for foreign benzene was not uncommon. Even domestic coal tar benzene prices firmed rapidly, jumping from 22¢ to about 35¢ a gallon.

Then the Korean incident brought about reactivation of the U.S. synthetic rubber program—adding about



a 35 million gallon benzene requirement to cut into an already short supply.

At that time representatives of all the benzene-consuming industries in the U.S. (under DPA sponsorship) took a long hard look at the future benzene supply-demand picture, arrived at a unanimous conclusion: There wasn't going to be enough for a long time.

The government scanned the dim forecast, immediately came up with a support program in the form of 5-year accelerated amortization for petroleum benzene producing facilities. The original objective was 85-90 million gallons of petrobenezene a year.

Pioneers like Pan American Refining and Shell Oil had, in the meantime, been doing much development work on aromatics from petroleum, were able to jump into the breach almost immediately by converting wartime toluene facilities to benzene.

Since then other oil companies have joined the parade—Continental, Standard (Ind.), Standard (Calif.), Atlas Processing, Standard (N.J.).

... And Now: Estimates of petroleum benzene production by all methods (Hydroforming, Platforming [developed by Universal Oil Products], Atlantic Refining's platinum catalyst process, Houdry Process Corp.'s Houdriforming) indicate that some 105 million gallons a year will be available from this source by next year.

Add to this the import equivalent, about 48 million gallons, and it becomes clear that the gap between coal tar benzene and total demand will just about be bridged by the end of 1953.

**Poser:** But one big question pops up now and then to plague would-be petrobenezene producers. Is there really a shortage of benzene?

Facts, figures and forecasts seem to say, yes. But one old-line producer tells CW, "There is a shortage of benzene—but only of the lower-cost coal tar product."

The reasoning behind this statement gives pause for thought. During the recent 8-week steel strike the U.S. lost some 30 million gallons of coke-oven benzene. And that loss did not put a single consumer in a spot to run for aid to petrobenezene producers.

Last year's imports (40 million gallons) and petrobenezene output (25 million) evidently was enough to fill consumers' inventories. There was enough—with lessened demand—to carry consumers through what should have been a tight-belt period. Producers complained as late as two months ago that "benzene was running out of their ears." Some petroleum benzene producers are even saying that today. One result of this line of thinking may be scuttling of some of the 18 petroleum benzene projects now in the planning stage.

For it's a fact that almost every gallon produced from coal tar is contracted for; buyers are still looking for the cheaper material, turning away from the higher.

**Price-Tag Differential:** Price seems to be the dominant factor in the entire benzene market. While the petroleum industry would find it extremely uneconomic to lower its benzene selling price from the current 55¢ (and up) figure because of high operating costs, the coal tar producers are caught in a ceiling price squeeze that keeps their product down to a 32¢-37¢ level.

This artificial disparity in prices urges attempts by some consumers to wangle directives out of Washington to get the lower-cost benzene.

**Safe Bet:** But despite the high-low prices; regardless of temporary dips and surges in benzene supply/demand curves, this much is certain: Over the long haul, production and consumption of benzene will inexorably rise. For it is a fact, too, that many of the benzene end-uses we know now were undreamed of ten years ago, and market researchers can only guess what the pattern will be a decade from now.



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September 16	3-1134-B	7020 ea	Extinguishers fire chemical carbon tetrachloride portable hand operated Fed. Spec. O-F-351.
Commandant of the Marine Corps, Washington, D.C. ATTN: Supply Department, Procurement Section			
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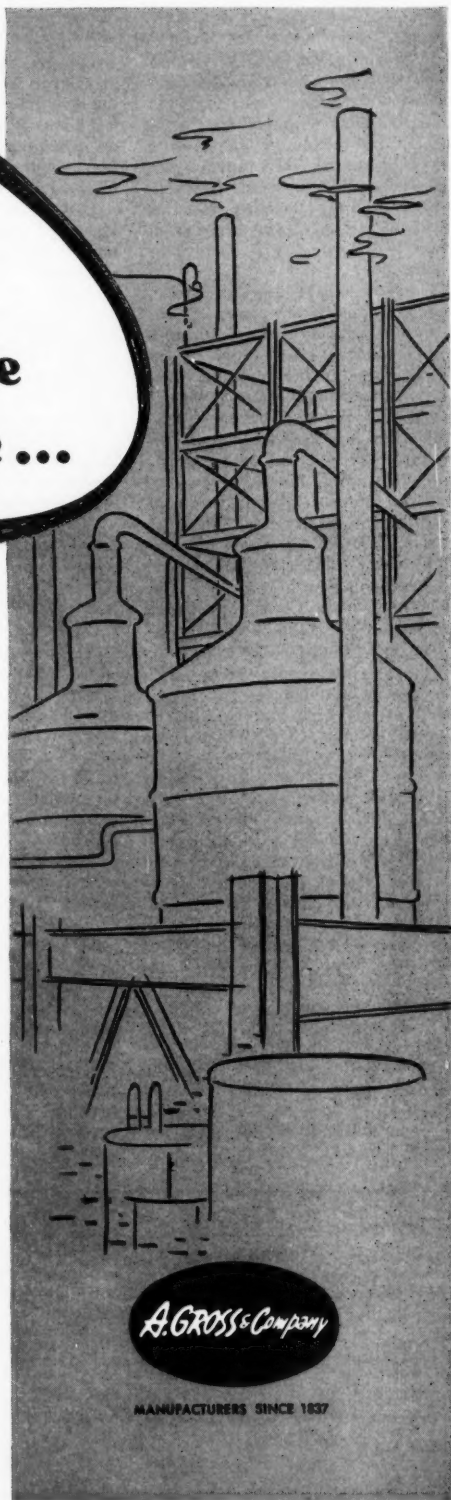
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# SPECIALTIES . . . . .

## Load off Accountants

Recent amendment to GOR 3 exempts some chemical specialties, drugs, cosmetics from price control during preliminary sales.

**Ruling means less paperwork for both OPS and manufacturer when a new product is being introduced.**

A break for the chemical specialty maker and drug firms is amendment 5 to the OPS's General Overriding Regulation 3.

Now exempted from price controls: The initial \$25,000 manufacturers sales of cosmetics or chemical specialties by small (defined as firms with total gross annual sales of \$250,000 or less) companies; new chemicals and drugs until sales reach \$1,000; chemicals and drugs in experimental production until sales reach \$25,000, with a provision for possible extension.

New chemicals, drugs, chemical specialties, and cosmetics are defined as those not offered before January 26, 1951. Experimental chemicals naturally are not limited by this date, and previous provisions of GOR 3 exempted certain reagent chemicals, butadiene from non-petroleum sources used in synthetic rubber manufacture, a variety of fertilizer chemicals, and AEC-produced uranium compounds.

**Experimental Expense:** "It was about time," one specialties maker pointed out, "the government recog-

nized that we have limited resources to introduce a new product. It sometimes takes the OPS longer to make a ruling than it does for us to discover the damn stuff won't sell at any price."

It was with just that in mind that the amendments were authorized. In the case of experimental chemicals, cognizance was taken of the frequently expensive research programs necessary to develop them. GOR initially permitted the first \$1,000 sales of an experimental chemical to be control-free; this has proved to be far too low, and the amount has been boosted to \$25,000 (section 2, para [c] GOR 3 sets forth procedure to extend this).

**GOR Glossary:** The new amendments require a definition of terms. Section 5 explains:

- "Chemical specialties" includes products for institutional or household

purposes, such as (but not limited to) cleaning and sweeping compounds, disinfectants, household insecticides and the like. Specialties for industrial use are typified as those employed in the processing or treatment of textiles, leather, paper and pulp, rubber, ceramics and petroleum, as well as for use in metal refining and working, electroplating, laundry and dry cleaning operations, building and plant maintenance and similar industrial operations.

- "Drug" means any proprietary drug product, and any drug and medicine of the kind listed in Major Group 65, Standard Commodity Classification, Technical Paper No. 26, Vol. 1, U.S. Gov't. Printing Office, 1943, except those commodities which generally sell for non-medicinal uses.

- "Cosmetic" is defined as any product intended to be rubbed, poured, sprinkled or sprayed upon or introduced into or otherwise applied to the human body for cleansing, beautifying, promoting attractiveness, or altering the appearance. Soaps aren't regarded as cosmetics, but shaving soaps and liquid shampoos are.

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**Centrifugals, Bird 48", Rub. Covered, First Machinery,** 157 Hudson St., N.Y. 13, N.Y.

**Dryer, Vacuum Shell, 20 shafts, 59 x 78, pump, cond. (6), Consolid'd. Prod.,** 18 Pk. Row, N.Y. 38.

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**Mills, Raymond #5047 & 5057, High Side Roller, (2). Consolidated Prods.,** 18 Park Row, N.Y. 38.

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**Mixer Lab 3 qt. cap. 1/4 HP, Readco.** Eagle Industries, 108 Washington St., NYC.

**Mixer, Lab., BP Vacuum, 7 1/2 gal. jktd., MD.** Complete, Eagle Industries, 108 Washington St., NYC.

**Mixers, 700 gal. Turbo, Simplex, jktd. (2). Consolidated Products,** 18 Park Row, N.Y. 38.

**Mixers, horiz. ribbon, 14'x7'6"x6', jktd. 450 cu. ft. (2). Consolid'd. Prod.,** 18 Pk. Row, N.Y. 38.

**Pebble Mills; 8'x8', Porcelain lined. First Machinery Corp.,** 157 Hudson St., N.Y. 13, N.Y.

**Pebble Mills 10 gal. to 800 gal., porcelain lined, 20. Consolidated Products,** 18 Park Row, N.Y. 38.

**Reactors, Pfaudler jktd. 400 Ga. First Machinery Corp.,** N.Y. 13, N.Y.

**Tablet Press, No. 51/2, Colton, 3" maximum.** Consolidated Products, 18 Park Row, N.Y. 38.

**Tanks, Alum, Pressure—330 and 480 gal. Perry Equipment,** 1415 N. 6th St., Phila. 22, Pa.



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**Tanks, 6500 gal. capacity, steel storage, recovered from dismantled tank cars, coiled & non coiled.** Marshall Railway Equipment Corp., 50 Church St., N.Y. 7, N.Y.

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## SPECIALTIES . . . . .

ing a burden from the small manufacturer, the amendment (effective just last month) saves the OPS the trouble of establishing ceiling prices of commodities which are not particularly part of the stabilization program.

When sales of specialties or drugs have exceeded the control-free permitted volume, the manufacturers must of course establish a ceiling price and observe the record-keeping requirements of the applicable regulations.

**For Glamour?** Latest product packaged in polyethylene spray bottles is Wella Color Streak hair powder. The chic effect of a metallic stripe in the hair is achieved by spraying the powder from a Millsplastic bottle (Elmer E. Mills Corp., Chicago).

**Welcomed in Elkin:** Capitalized at \$50,000, Technic Industries has obtained a certificate of incorporation and will deal in chemicals in Elkin, N.C.

**Catalin Expansion:** Thomasville, N.C. plant of the Catalin Corp of Amer-

ica is being enlarged; one warehouse has been completed, further expansion is planned.

**Bollworm Killers:** The new organophosphate pink bollworm killers that the USDA has uncovered are far from ready for commercial availability, the USDA cautions. Though the chemicals are proved effective, tests are incomplete regarding possible toxic residues, and proper methods and amounts of dosages.

**Parathion Caution:** The Florida Citrus Experiment Station has re-emphasized its warnings concerning use of parathion. Fearing that use of the chemical may be restricted, and that industrial insurance rates may rise sharply, Dr. Camp, vice director of the station, has issued a list of cautions. And he pointed out that many cases diagnosed as parathion poisoning may well be something else; he urges tests on the cholinesterase level in the blood of the patient. (Cholinesterase, an enzyme affecting nerve impulses, is destroyed by parathion.)



## Tress Treatment Laboratory

TESTS ON previously unwaved human hair is part of the Toni Co.'s research program on hair waving preparations. In new laboratories dedicated last week, technician Florence Williams checks the efficacy of a new Toni-developed hair cosmetic. The

new labs, adjacent to the firm's offices in Chicago's Merchandise Mart, occupy 10,000 sq. ft. Over \$600,000 is budgeted for research this year, principally for physical and chemical study of human hair and skin and the effects on them during various treatments.

# BOOKLETS . . . . .

## Chemicals

### Synthetic Organic Chemicals

160-p. edition of the book "Synthetic Organic Chemicals" contains information on over 250 of Carbide and Carbon's products, and covers the principal groups of organic chemicals. Tables on physical properties, chemical characteristics, specifications, and shipping data are included. Carbide and Carbon Chemicals Co., 30 E. 42 St., New York 17, N.Y.

### Carbon Black Pigments

16-p. booklet intended to designate the proper carbon black for a particular technical demand. Types, electrical properties, testing procedures, and technical data are included. Godfrey L. Cabot, Inc., Special Blacks Division, 77 Franklin St., Boston 10, Mass.

### Industrial Chemicals

4-p. technical data sheet gives chemical formulas, molecular weights, boiling points, solubilities, etc. of alcohols, amines and ammonia, esters, nitroparaffins, and other products. Commercial Solvents Corp., 260 Madison Ave., New York 16, N.Y.

### Nitroparaffins

4-p. technical data sheet entitled "Handling of the Nitroparaffins" contains flash points of liquids and limits of flamma-

bility of vapors in air, toxicity, stability, and other topics. Commercial Solvents Corp., 260 Madison Ave., New York 16, N.Y.

### Aniline Salt

12-p. booklet describes aniline salt in pure crystal form. Types, uses, and applications are discussed and recipes for each dye are given. Calco Technical Bulletin No. 821, American Cyanamid Co., Calco Chemical Division, Bound Brook, N.J.

## Equipment

### Vacuum Processing

12-p. catalog entitled "Complete Vacuum Processing Systems" pictures and describes types of vacuum equipment used in industrial processes. Included are: rotary vacuum dryers, vacuum shelf dryers, and vacuum pumps. Request catalog No. 730, F. J. Stokes Machine Co., 5500 Tabor Rd., Philadelphia 20, Pa.

### Dust Filter

8-p. brochure describes in detail the new Sly Dynaclone dust filter, designed for the continuous process industries where uniform suction at all dust points is essential. Complete engineering data, hints on the engineering of dust control problems, and other aids are included.

Request bulletin No. 102, W. W. Sly Manufacturing Co., Cleveland 2, O.

### Multi-Purpose Hose

8-p. pamphlet describes "Basic-Five," color-coded, multi-purpose industrial base line. Details of construction, sizes, lengths, pressures, recommended coupling and uses for the new hose line are discussed. Thermoid Co., Trenton, N.J.

### Worm Gear Motor

8-p. bulletin on right-angle type GW Syncregear motor. Mounting, alignment assurance, and other general characteristics are included. Complete with colored illustrations. U.S. Electrical Motors, Inc., Box 2058, Los Angeles 54, Calif.

### Feeding Table

2-p. bulletin on "Hydraulic Strip and Sheet Feeding Table" describes advantages of equipment, specifications, and application photographs. Bulletin 262, The Raymond Corp., 5594 Madison St., Greene, N.Y.

### Bag Loader

4-p. brochure describes bag flattener, pallet loader, and elevator. The principle and method of operation of the machine, advantages, and abilities are listed. Complete with illustrations. Power-Curve Conveyor Co., P.O. Box 1146, Denver, Colo.

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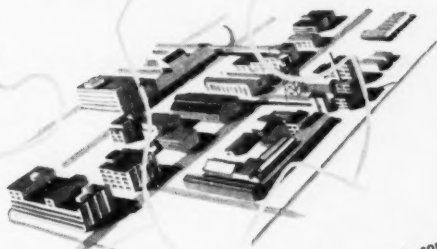
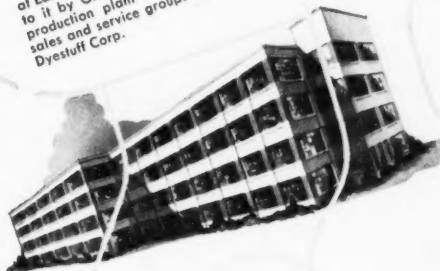
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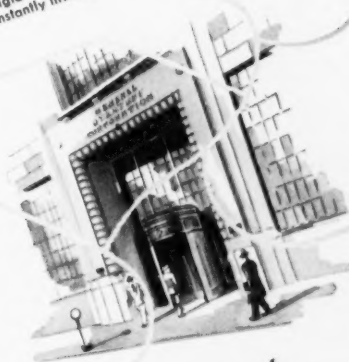
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